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Socialized scholarship: the role of departmental socialization on the institutionalization of Boyer's scholarship at one large research institution

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Socialized scholarship: The role of departmental socialization on the institutionalization of Boyer's scholarship at one large research institution

by

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DEDICATION

I dedicate this to my family. Barry, you believed in me from the beginning and still do. So much can be accomplished in life by just knowing that one person believes in you. I was blessed to have the very best three: my husband, my son, and my daughter. To Jackson, who you are just exceeds my dreams of you. I loved your poem when I did my proposal defense, and I loved when you encouraged me to keep going when I was no longer sure I had it in me. I would do anything for both of you. To Jenna, you too exceed my dreams of who I imagined my daughter would be. Your laughter brings me joy in ways you will never understand until you yourself are a mother. You also gave me encouragement to keep on going; and to think I wanted so badly to model pursuing your dream for both of you. I think I did pretty well. You learned just how hard achieving a dream can really be, that there will be highs, but also a lot of lows if it's really a dream, and mostly you learned that the things that will get you there are persistence and support. You were both my inspiration for doing this, and so much of my ongoing support throughout it. I love you.

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To numerous friends, especially my cousin B who moved here right when I started this journey, and helped me raise my children in the midst of the days I had to disengage from all else; to Stacy, who inspires me always and sings my song back to me when I have forgotten the

words; to Gary, who joined me late in this journey, but pushed and encouraged me in the final and most difficult laps; to Sheri, who was a constant encourager and often provided the necessary lift, even when she didn't realize she was lifting; to Dee, who I promised this wouldn't get in the way of spending time together, but it just had to towards the end, and yet I know she will still love me anyway; to Sara, who understands me in ways I may not even understand myself; and to the rest of the Ya-Yas, who respected my wishes to disengage from "Ya-yaship" for a period of time as I focused on my research and wrote numerous papers.

Lastly, I stand on the shoulders of my mother who raised me to love learning, my husband who believed in, encouraged, and supported me, and my children who will never stop being a source of inspiration for me. I know without a doubt I would not be at the end…or a new beginning, if not for these strong shoulders.

ABSTRACT

The intent of this study was to build on previous works in an effort to establish new methods and frameworks to help understand why little has changed in faculty scholarship more than twenty years after *Scholarship Reconsidered*. A premise of this study is that the institutionalization of new domains of faculty scholarship in a university or college is a function of what scholarly domains the faculty are socialized in their departments to conduct.

The study revised the instrument used in *Institutionalizing a Broader View of Scholarship Through Boyer's Four Domains,* and implemented the new instrument with all full-time faculty at a large, research-intensive, land-grant institution. Interestingly, the demographic analysis of those faculty who want to conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (SEPP) in the future revealed that these two subsets had little to no differentiation in demographic profile. The most revealing difference was the twenty-eight percentage point difference in the percentage of faculty who are conducting the scholarship of extension/professional practice as opposed to the percentage of faculty who desire to conduct SEPP in the future. It was posited this was due to the perception of what actually constitutes SEPP by Iowa State University faculty.

Descriptive and inferential analyses were conducted on gender with regard to tenure status and rank. The non-tenured status ratio was 2:1 for females (42%) as compared to males (20%). Also in the full dataset, professors were more than three times likely to be male than female. The results from this study held in a statistically significant manner with the literature regarding gender in relation to rank and tenure status.

Two hierarchical multiple regression analyses were conducted to determine the influence of departmental socialization on faculty desire to conduct the two scholarly domains, with three blocks in each model: faculty's background characteristics, faculty's institutional characteristics, and departmental socialization. The departmental socialization proxy was a significant positive predictor of faculty desire to conduct both scholarly domains. Interestingly, but not surprisingly, the new construct of perceived departmental reward was a significant negative predictor of faculty desire to pursue both scholarly domains. Consistent with the literature related to the importance of promotion and tenure in scholarship influence, faculty are not likely to want to pursue scholarly domains for which they perceive they will not be rewarded.

CHAPTER 1: INTRODUCTION

Overview

Since the seminal report *Scholarship Reconsidered* by Ernest Boyer in 1990, hundreds of institutions both nationally and internationally, similar to the case institution in this study, have changed their promotion and tenure language to encourage and reward multiple domains of scholarship (Braxton, Luckey, and Helland, 2006; Diamond, 1999; Glassick, Huber, and Maeroff, 1997; O'Meara, 2002b; O'Meara and Rice, 2005; Rice and Sorcinelli, 2002). However, little seems to have changed in higher education relative to faculty work and status. The publish or perish mentality for all faculty has not ebbed; if anything, faculty workload expectations have only escalated with the increasing expectation to secure research grants and articles published in the most prestigious peer-reviewed journals. The current publication standards for tenure are more than triple what they were in the 1970s (Schuster & Finkelstein, 2006). Meanwhile, society's problems are complex and call for the attention of our best and brightest minds. And what about our undergraduate students to whom we should be providing the best education possible? Have our scholarship expectations served them well or developed a system in which they are merely an afterthought? In simple terms, something has to change for the sake of our students, the public we serve, and our faculty who deserve more from our institutions, as opposed to thinking we can just continue to expect more from them.

Interestingly, the review of the literature found that diverse populations of faculty in particular are interested in pursuing what they perceive to be more meaningful scholarship than basic research. Faculty of color were 75 percent more likely than Caucasian faculty to pursue an academic position with the ideal of using their position to effect societal change (Antonio, 2002). What is traditionally viewed as scholarship by faculty of color and women is often not viewed as

"legitimate" scholarship (Terosky, Phifer, & Neumann, 2008). To add insult to injury, a study of ten Association of American Universities (AAU) institutions revealed that female faculty trail males and minorities trail non-minorities in the rates at which they achieve tenure (Dooris & Guidos, 2006). This eventually creates disparities in faculty rank. This particular AAU institution has a 4:1 ratio of male Professors to female Professors. According to Chepyator-Thornson and King (1996), "The current scholarship model in higher education has been conceived, produced, and reproduced in the image of the dominant culture. The values, behaviors, and expectations for the academy have been forged by a university culture that is 'relatively homogeneous by race, ethnicity, and gender (Menges & Exum, 1983, p. 186).'"

Greater diversity in our scholars and scholarship could be the greatest strength of our higher education system, providing greater diversity in perspectives. However, our academic institutions are still not yet structured to embrace all scholarly contributions. Full participation, as conceptualized by Sturm (2007), includes equal opportunity for all to participate in the work of the university, achieve one's fullest potential, and have voice in decision-making. This requires, "architecture for inclusion," or organizational structures and conditions that support diverse faculty and diverse forms of scholarship (Sturm, 2007). Meanwhile, initiatives to increase faculty diversity are commonplace in higher education. These initiatives cost money, which we are willing to spend, but are they working? Or, are these resources spent without regard for the real barrier to greater diversity: acceptance of diverse scholarship?

Clark portrayed the changing relationship between higher education and its new environment in the following manner:

> So much is now demanded of universities that traditional ways prove inadequate. Universities require not only an enlarged capacity to respond to changes in the external

> worlds of government, business, and civic life but also a better honed ability to bring demands under control by greater focus in institutional character. Strongly needed is an overall capacity to respond flexibly and selectively to the changes taking place within the knowledge domains of the university world itself. (1998, p. xvi)

Institutionalization of Boyer's multiple forms of scholarship has the potential to address all of the problems identified earlier simultaneously. Faculty could be rewarded for the type of work the public and the legislative bodies that fund them have criticized them for neglecting. Given the freedom to pursue the form of scholarship most meaningful to them, faculty could also be more effectively retained due to greater work satisfaction. Faculty would be more likely to engage more deeply in undergraduate education if they could be rewarded for the work. And what about female and minority faculty? They could have the freedom to pursue the diversity of scholarship in which they find purpose, while no longer jeopardizing their ability to be tenured or promoted. Our efforts to have a more diverse faculty population may actually take hold.

Research related to Boyer's domains of scholarship abounds, but is limited in relation to a better understanding as to why greater institutionalization has not occurred. Much of the research on Boyer's scholarship model seeks to define the domains and develop evaluation criteria for them. Few studies have been conducted in relation to actual institutionalization of Boyer's domains and the motivations or barriers to doing so. In those that have, socialization in graduate education has been determined as problematic (O'meara, 2008; Braxton, Luckey, & Helland, 2002). A gap exists in addressing culture and socialization of faculty in academic departments. The intent of this study was to build on previous works in an effort to establish new methods and frameworks to help understand how departmental socialization of the faculty has influenced the institutionalization of Boyer's domains of scholarship. This study adds to the

scholarly research and literature in the field of higher education and faculty scholarship because it operationalizes and examines how departmental socialization influences faculty desire to conduct Boyer's domains of scholarship.

Because the study examines an entire population of faculty from all academic departments, the study also adds to the research literature on faculty conduct and value for Boyer's domains of scholarship, particularly to studies focusing on faculty work in disciplines previously not explored by the literature, and studies related to scholarship at research intensive, land-grant institutions. Finally, the study contributes to the body of knowledge related to faculty work, particularly gender and faculty scholarship.

Problem

Higher education institutions and national associations across the United States have long ago initiated dialogue about Boyer's *Scholarship Reconsidered*. Just four years after its publication in 1990, 62% of chief academic officers (CAOs) in four-year institutions indicated that this work had a role in campus discussions of faculty roles and rewards (Glassick, Huber, & Maeroff, 1997). A query of the Institute for Scientific Information's citation database reveals that Boyer's *Scholarship Reconsidered* was one of the most frequently cited education publications from 1995-2005 (Braxton, Luckey, & Helland, 2006). Finally, according to O'Meara (2006), hundreds of institutions have actually broadened the institutional definitions of scholarship used in their faculty reward systems.

Almost twenty-five years later, however, little progress has been made in genuinely institutionalizing Boyer's three of the four domains of scholarship at what Curry (1991) describes as a sustainable level of institutionalization: incorporation. And yet, we see a continued need to blend disciplines to address complex problems (scholarship of integration),

increased calls for faculty to become more involved in our communities (scholarship of application or engagement), and continued demands for accountability on student learning outcomes (scholarship of teaching and learning). This field of study has been progressively growing as scholars and academic leaders try to understand the extent, success, and impact of reform efforts for faculty roles (Braxton, Luckey, & Helland, 2006; Huber, 2002; O'Meara & Rice, 2005).

Braxton, Luckey, and Helland (2002) used Curry's (1991) model of institutionalization as their guiding framework to explore the degree to which faculty in four disciplines institutionalized Boyer's four domains of scholarship, and found that only the scholarship of discovery (traditional, basic research) had achieved the highest level of institutionalization, termed incorporation. At this level, change has taken hold in the individually-held beliefs and values (the culture) of the organization. This result did not shed much light on anything new, however, since traditional, basic research has historically been the institutional norm for scholarship.

O'Meara (2002a) conducted case studies at four colleges and universities to assess the impact of their efforts to redefine scholarship. She found that these four institutions were experiencing slight improvements in reward system balance and faculty involvement in the four domains of scholarship. O'Meara followed this research with a three-year study that focused on chief academic officers (CAOs) of four-year institutions, including a national survey, regional focus groups, and demonstration projects that had "Boyerized" their campus reward systems (O'Meara & Rice, 2005). She found that CAOs from reform institutions (those institutions that made changes to their reward systems in the previous five to ten years to acknowledge, support, and reward multiple forms of scholarship) were significantly more likely than CAOs at non-

reform institutions to find that the primary interests of new faculty aligned with the institution's mission and goals, and find a more balanced faculty reward system where teaching, research, and service are valued more equitably (O'Meara & Rice, 2005). The authors also found CAOs at reform institutions were more likely than those at nonreform institutions to indicate that faculty involvement in Boyer's scholarship model had increased, and that their faculty were better able to achieve tenure and promotion based on scholarship in one of the alternative domains than the decade prior (O'Meara & Rice, 2005).

Little empirical work has been conducted to date to understand institutionalization of Boyer's scholarship model from the faculty or the sociological perspective except from the aspect of graduate socialization. By the time this work is published, the Boyer report will be twenty-four years old. While the research done to date represents significant steps, more research is needed to better understand why greater institutionalization has not yet occurred.

Purpose of the Study

The purpose of this study was to investigate the relationship between the faculty characteristics of gender, race/ethnicity, time since completion of highest degree, personally held value for these alternative domains of scholarship; institutional characteristics of rank, tenure status and discipline; faculty socialization within the department; and the conduct of and desire to conduct Boyer's domains of scholarship. In addition to descriptive statistics, this study used analysis of variance (ANOVA) and hierarchical regression analyses to identify the variables influencing faculty conduct of and desire to conduct Boyer's domains of scholarship. The study also sought to understand and describe the extent to which faculty differ in both their conduct of and desire to conduct the various domains of scholarship by gender, race/ethnicity, rank, tenure status, discipline, and time since PhD completion. The unit of analysis was the population of

faculty at Iowa State University during the Spring 2011 semester. A survey instrument was created as the method of inquiry for this study.

Iowa State University (formerly Iowa Agricultural College and Model Farm) was officially established on March 22, 1858 by the State of Iowa's legislature. The Iowa legislature voted to accept the provision of the Morrill Act in 1862. As a land grant institution, Iowa State University (ISU) focused on the ideals that higher education should a) be accessible to all and b) teach liberal and practical subjects. Iowa State was actively bringing knowledge to the people of Iowa even before the Smith-Lever Act of 1914 established the Cooperative Extension Service. The institution is a leader in agriculture, technology, science and art, and created the nation's first state veterinary medicine school in 1879. In 1959, the college was officially renamed Iowa State University of Science and Technology, which has led directly to many research patents and inventions. ISU now has approximately 33,000 students and over 100 buildings with world class programs in agriculture, technology, science, and art. It is considered a Very High Research Activity Research University by the Carnegie Classification System and is a member of the prestigious Association of American Universities.

Given that the mission statement of Iowa State University (ISU) is to "Create, share, and apply knowledge to make Iowa and the world a better place," greater efforts to align the institutional mission with these two domains of scholarship, while maintaining excellence in the scholarship of discovery, should be explored. The mission statement is made more explicit in stating:

> We must prepare the leaders of our nation and the world. To make the world a better place, Iowa State will call upon its great strengths in student-centered education, global collaboration, and transformational basic and applied research. Iowa State will lead in

developing more sustainable ways to produce and deliver safe and nutritious food, water, materials, and energy; integrate the protection of plant, animal, and human health; and care for our environment. We will design tools and infrastructure that will create entrepreneurial opportunities. The major changes sweeping the world are creating extraordinary opportunities for Iowa State to capitalize on its land-grant mission and be at the forefront in addressing our common, global challenges.

- To create knowledge, Iowa State must be a magnet for attracting outstanding students, faculty, and staff who will learn, work, and conduct world-class research and scholarship that address the challenges of the 21st century.

- To share knowledge, Iowa State's faculty, staff, and students must be able to communicate with and learn from diverse populations. The University must maintain a strong focus on student success and provide exceptional undergraduate, graduate, professional, and outreach programs that prepare students and citizens for leadership and success.

- To apply knowledge, Iowa State's faculty, staff, and students must be able to develop global partnerships to convert what they know into products, services, and information that will improve the quality of life for the citizens of Iowa, the nation, and the world (http://www.president.iastate.edu/sp/)."

Research Questions

The following research questions guided this study:

1. What are the demographic characteristics of all faculty respondents and those faculty who want to conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (SEPP) in the future?
2. How does tenure status compare by gender and are there significant differences in tenure status by males and females?
3. How does Rank compare by gender and are there significant gender differences among rank?
4. Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship between genders?
5. Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks?
6. Does departmental socialization serve as a predictor of the desire to conduct the scholarship of teaching and learning and the scholarship of professional practice?

Hypotheses

Hypotheses are presented for research questions two, three, four, five, and six. Question one was descriptive in nature.

$H_0$1: There is no significant difference in tenure status between genders

$H_0$2: There is no significant difference in gender among faculty rank

$H_0$3: There is no significant difference in the conduct of and desire to conduct Boyer's alternatives forms of scholarship between females and males

$H_0$4: There is no significant difference in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks.

$H_0$5: There is no relationship between socialization in the department and the desire to conduct Boyer's alternatives domains of scholarship.

Definition of Terms

In this research, scholarship was categorized into four domains, as identified by Ernest Boyer (1990): scholarship of teaching and learning, scholarship of integration, scholarship of application or engagement, and the scholarship of discovery.

Scholarship of Teaching and Learning

Lee Shulman (1999) described a teaching act as scholarly when it is disseminated within academia, is peer reviewed by an academic or teaching discipline, and when that discipline uses or creates new work. More specifically, the scholarship of teaching and learning is characterized by a systematic study of teaching and learning at the collegiate level that results in public dissemination.

Scholarship of Discovery

Boyer (1990) defined the scholarship of discovery as the generation of knowledge for knowledge sake; it is conducted to not only advance the field of knowledge but also to advance the intellectual climate. The scholarship of discovery is characterized by basic research that expands or challenges current knowledge in a discipline, and is evaluated through the traditional means of peer-reviewed published journal articles.

Scholarship of Application or Engagement

The scholarship of application or engagement is defined as the application of knowledge to address real world problems. More specifically, the scholarship of application or engagement is characterized by the extent to which a faculty member uses their professional expertise to

address problems directly in the community. At Iowa State University, this scholarship is referred to as the scholarship of extension/professional practice.

Scholarship of Integration

The scholarship of integration is defined as scholarship that makes connections across disciplines and shapes a more integrated use of knowledge (Boyer, 1990). More specifically, the scholarship of integration is characterized by its interdisciplinary nature.

Socialization

Schein (1968) describes organizational socialization as the process of being taught what is important in an organization or within one of its subunits.

Institutionalization

Clark (1971, p. 75) defined institutionalization as "the process whereby specific cultural elements or cultural objects are adopted by actors in a social system."

Variables

The study focuses on two outcomes: faculty conduct of and desire to conduct Boyer's domains of scholarship. The independent variables used in the study are organized into three major categories: (1) faculty background characteristics, (2) faculty institutional characteristics and (3) faculty socialization in the department.

Population

This study specifically examines a population of faculty at Iowa State University, thus, focusing on a within group analysis. Within the faculty population, a between-group analysis was conducted to analyze the differences between gender. In addition, an among group analysis was conducted to analyze the differences among the following faculty rank.

Intent

The intent of this study was to build on previous works in an effort to establish new methods and frameworks to help understand why little has changed in faculty scholarship more than twenty years after *Scholarship Reconsidered*. This study adds to the scholarly research and literature in the field of higher education and faculty scholarship because it operationalizes and examines how faculty socialization in the department influences the desire to conduct Boyer's domains of scholarship.

Because the study examines an entire population of faculty from all academic departments, the study also adds to the research literature on faculty conduct and value for Boyer's domains of scholarship, particularly to studies focusing on faculty work in disciplines previously not explored by the literature, and studies related to scholarship at research intensive, land-grant institutions. Finally, the study contributes to the body of knowledge related to faculty work, particularly gender and faculty scholarship.

Theoretical Perspective and Conceptual Framework

Conceptual Framework

After reviewing the institutionalization of change and socialization literature, the conceptual framework of Curry's Model of Innovation (1991) used by Braxton et al. in their 2002 study of institutionalization of Boyer's scholarly domains was selected. Curry's model of innovation includes three levels of institutionalization: structural, procedural, and incorporation or institutionalization, in which the importance of the third stage, institutionalization, is stressed to sustain institutional innovations. At this third and final stage, the innovation is embodied in the values and norms of the institution. Specifically, that for innovation to be institutionalized, it must be part of the culture, investigated in this study at the departmental level only. The

conceptual framework was augmented by introducing departmental socialization as a possible new proxy for institutionalization of innovation in higher education. Braxton et al. (2002) posed graduate education, institutional culture, and academic reward as the proxies for institutionalization in their study. However, the three proxies alone seemed inadequate to better understand the institutionalization of Boyer's scholarship domains. Since the importance of graduate education socialization had already been long-established in the research literature, it was determined to primarily focus on academic reward (enhanced to more broadly become departmental socialization) as the proxy for institutionalization of Boyer's scholarship domains. Bandura's social learning theory (1977, 1986) provided the theoretical framework for departmental socialization.

Theoretical Framework

Stated previously, Bandura's social learning theory provides the theoretical foundation for faculty socialization in the study. According to Bandura (1986), when faced with uncertainty about how to become socialized to a culture, social learning theory posits that individuals will model the behaviors of referent others (Bandura, 1986). In other words, human behavior is learned through interaction and observation of others in a social context (1977, 1986). It is through the observation of other people's actions and consequences (in the context of this study, scholarship and its rewards), that individuals acquire rules and develop their own hypotheses about which responses are most appropriate (Bandura, 1977). The occurrence of social learning activity is demonstrated in numerous prior studies as individuals draw conclusions about the value of various behaviors by observing the decisions of their peers (Glaeser, Sacerdote, & Scheinkman, 1996; Duflo and Saez, 2002). Another critical aspect of social learning theory is that observation also teaches us the likely consequences of various behaviors. Bandura refers to

this as vicarious reinforcement.

Though it had not previously been applied as a theoretical framework for faculty socialization, Bandura's social learning theory was selected because it provides a theoretical framework to explain the process through which new faculty members learn, through observation, modeling and perceived reward, what form(s) of scholarship are valued in the department. Through this theoretical lens, social learning theory items were developed for the survey instrument in consultation with a research methodologist from the University of Northern Iowa's Center for Social and Behavioral Research under the Departmental Statements section.

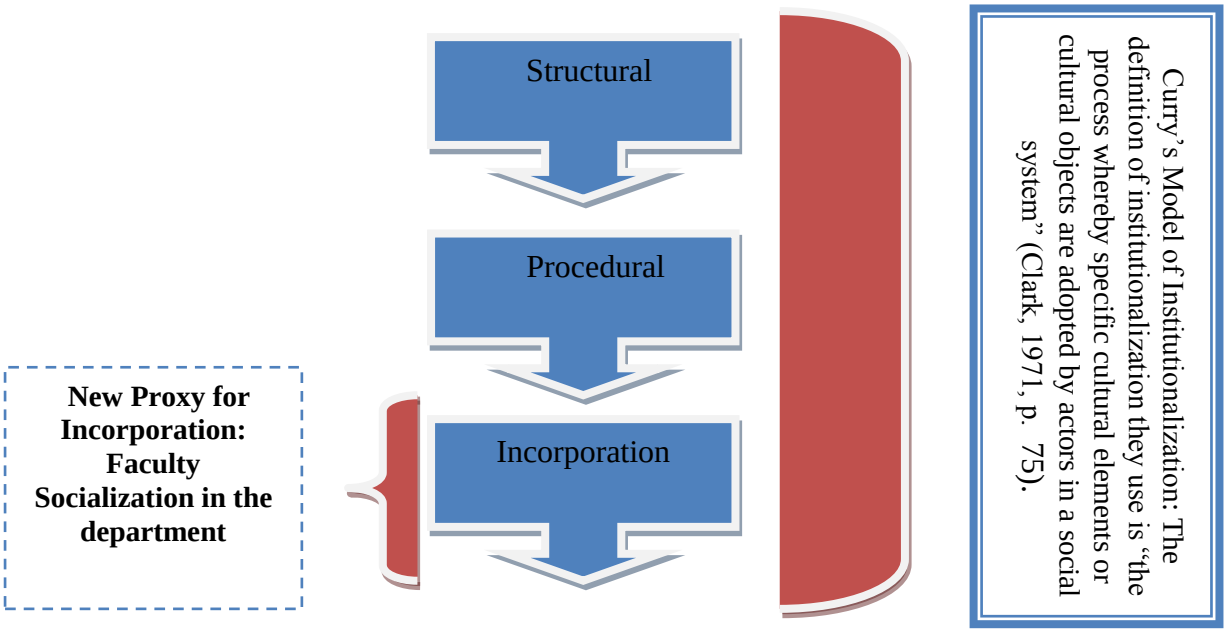

Figure 1. Conceptual framework for institutionalizing Boyer's Scholarship Model

Significance of the Study

Little literature exists regarding the institutionalization of Boyer's alternative domains of scholarship, yet more than twenty years have passed since Scholarship Reconsidered was published. Institutionalization research to date indicates that little institutionalization has in fact occurred, and even less is understood about why that might be. Graduation education has been pointed to as a possible reason, since faculty are not prepared for work in these alternative domains during graduate school. However, neither are they generally prepared to teach while in graduate school; yet many faculty develop into effective teachers.

A more complete understanding of Boyer's scholarship domains, including how they are valued, conducted, desired to be conducted and perceived to be valued within departmental cultures; the differences in their conduct and desire for conduct between genders and among rank; and the influence of departmental socialization on faculty desire to conduct Boyer's scholarly domains, is vital to better understand whether additional change is in fact desired and needed. This study will be beneficial for both higher education institutions and researchers.

While some research has been done to date on the institutionalization of Boyer's scholarship model, these studies have either examined institutionalization from the perspective of chief academic officers or faculty from only a few disciplines. The intent of this study was to build on previous works in an effort to establish new methods and frameworks to help understand why little has changed in faculty scholarship more than twenty years after *Scholarship Reconsidered*. This study adds to the scholarly research and literature in the field of higher education and faculty scholarship because it operationalizes and examines how faculty socialization in the department influences the desire to conduct Boyer's domains of scholarship.

Because the study examines an entire population of faculty from all academic departments, the study also adds to the research literature on faculty desire to conduct and value for Boyer's domains of scholarship, particularly to studies focusing on faculty work in disciplines previously not explored by the literature, and studies related to scholarship at research intensive, land-grant institutions. Finally, the study contributes to the body of knowledge related to gender and faculty scholarship.

Summary

The purpose of this study was to investigate the relationship between the faculty characteristics of gender, race/ethnicity, time since completion of highest degree, personally held value for these alternative domains of scholarship; institutional characteristics of rank, tenure status and discipline; faculty socialization within the department; and the conduct of and desire to conduct Boyer's domains of scholarship. The intent was to build on previous works to establish new methods and frameworks to help understand why little has changed in faculty scholarship more than twenty years after *Scholarship Reconsidered*. Included in this study is a review of literature and the methodology, results, and discussion. Chapter 2 provides a review of the literature related to the topics of a historical background of faculty scholarship, Boyer's scholarship model, faculty characteristics and scholarship, institutionalization of change and socialization in higher education, the conceptual and theoretical frameworks, and relevant studies. Chapter 3 outlines the methodology that used to conduct the study. Chapter 4 provides the results from the study, and Chapter 5 concludes with the findings and discussion.

CHAPTER 2: REVIEW OF THE LITERATURE

Overview

This chapter focuses on the review of literature pertaining to the institutionalization of Boyer's scholarship model in higher education to bring greater recognition to the various forms of faculty work. This study sought to examine how faculty and institutional characteristics intersect with Boyer's scholarship model, and examine, in particular, how socialization in the department relates to the faculty desire to conduct Boyer's domains of scholarship. The historical background leading up to Boyer's scholarship model is first explored. An overview of Boyer's domains of scholarship is presented: scholarship of teaching and learning, scholarship of discovery, scholarship of application or engagement, and scholarship of integration. A summary of the literature on faculty background and institutional characteristics is presented next. Additionally, this chapter draws attention to the conceptual and theoretical frameworks, and the influences of culture and socialization on the institutionalization of organizational change in higher education. Finally, the chapter concludes with a review of other studies related to the institutionalization of organizational change in higher education, faculty socialization and Boyer's scholarship model.

Historical Background

At the time the Carnegie Foundation for the Advancement of Teaching commissioned a study in the late 1980s to examine the meaning of scholarship in the United States, many universities around the United States in the previous three decades had come to emphasize scholarship over teaching and service (Cheney, 1991; Boyer, 1990). Not only had scholarship become emphasized in the faculty workload triad, but the definition of scholarship itself had become so narrowly defined as to be research that led to publication (Metzler, 1994; Boyer,

1990). As if that was not enough, current publication standards for tenure are more than triple what they were in the 1970s (Schuster & Finkelstein, 2006).

These rising expectations for tenure and promotion have led to greater faculty dissatisfaction with their employment (Gappa, Austin, and Trice, 2007; Rice, 2006; Schuster and Finkelstein, 2006). Lindholm, Szelenyi, Hurtado, and Korn (2005) found that 44 percent of faculty listed tenure and promotion review as a key area of stress. The increasing expectations for promotion and tenure lead to an increasing workload, which causes further stress in faculty members' ability to balance their personal and professional life (Gappa, Austin, and Trice, 2007; Hagedorn, 2000).

Meanwhile, O'Meara (2002b) reminds us that these reward systems are about the valuing of professional work. They are the primary way we as an academic community come together to promote and assess each other's work. Yes, the consequences have enormous impact, but if done well, faculty reward systems can foster faculty satisfaction and growth.

It was recognized by some, including Carnegie, however, that the primary emphasis on research and publications had not only heightened faculty members' workloads, but had also disconnected higher education institutions from society's problems at a time when society's problems were increasing in size and complexity (Lynton, 1995). Derek Bok (1990) found faculty from the academy had grown increasingly detached from society, and that faculty had seldom discovered emerging problems that were then shared with the greater public. A refocus of the academy was in order, and is still in order today, one that again emphasizes teaching and the application of knowledge. Scholarship should still include basic research, but it should also be more than that. It should mean looking for connections, bridging theory and practice, applying knowledge to problems, and enriching the learning of students.

> In an address at the 2008 Association of the Study of Higher Education (ASHE), the then-president Linda Johnsrud confirmed that the need to retool faculty work still exists. I look back and realize that in all my zeal for quality, I never mentioned relevance. I never mentioned conducting research that matters. Not surprisingly, I never addressed how to measure quality. I didn't have to; I believed that I shared with my peers an agreed-upon measure for quality work—publication in top-tier journals. In thinking back on my own socialization as a faculty member, I am struck by how internally focused it was. I remember being introduced to the notion that there were faculty who were local and those who were cosmopolitan. I know that my socialization instilled in me the firm belief that cosmopolitan was better, that being connected to your disciplinary community on a national or international stage was to be prized, that service to your home institution—being local—was secondary. Service to the state or the nation wasn't even mentioned.
>
> What is the message we send as we socialize new faculty? Public colleges and universities educate 80% of the nation's college students. States spend roughly $70 billion a year on higher education, more than any other level of government. And we send the message that where we sit—who pays our salary—is irrelevant to the work we do? We have the luxury of choosing the focus of our scholarship, the ultimate in academic freedom; but does that freedom not come with some measure of responsibility to those who support that work? (Johnsrud, 2008, p. 494).

Scholarship Reconsidered

As stated earlier, Carnegie commissioned a report in the late 1980s by Ernest Boyer (1990) to review faculty work and compare their roles to both the faculty reward system and

higher education's mission. Boyer's work was a paradigm shift for scholarship, proposing that there are four dimensions of scholarship: the scholarship of teaching and learning, the scholarship of discovery, the scholarship of integration, and the scholarship of application.

Diamond (2002) found that these new domains of scholarship now encompassed a greater percentage of faculty work (see Figure 2). He also stated that the expansion of scholarship and the ensuing efforts to change the faculty tenure and reward system were one of the major areas of transition for colleges and universities in the twentieth century.

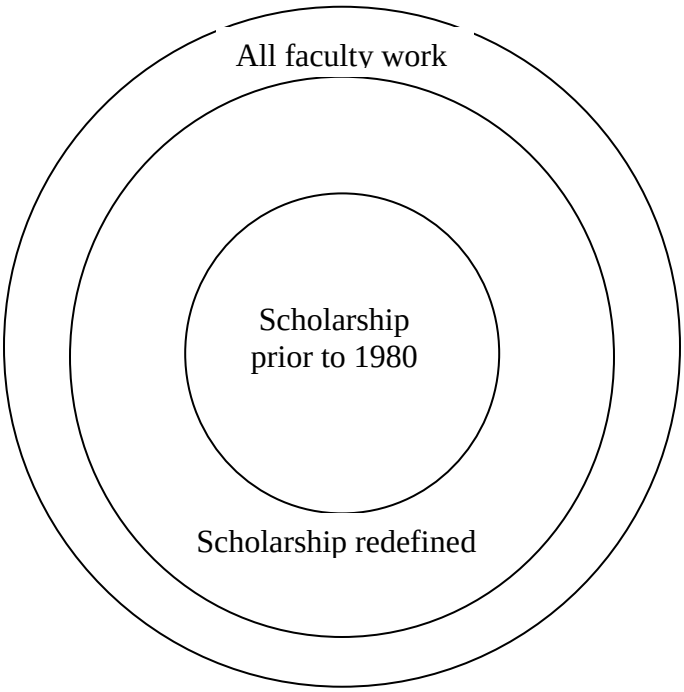

Figure 2. Scholarship and faculty work

Scholarship of Teaching and Learning

When Boyer introduced the original concepts surrounding the scholarship of teaching and learning (SoTL), he did not provide a definition, but instead he gave characteristics that

described it. Thus, SoTL is confusing to many faculty members. According to Boyer (1990), the scholarship of teaching and learning exhibits the following characteristics:

- entails systematic study of teaching and/or learning and the public dissemination of such work through presentations or publications;
- is discipline-based; and
- focuses on teaching and learning at the college level.

Lee Shulman (1999) described a teaching act as scholarly when it is disseminated within academia, is peer reviewed by an academic or teaching discipline, and when that discipline uses or creates new work as a result. Although variations of SoTL definitions exist, most contain these three fundamental aspects: dissemination, peer review, and contribution to the field of knowledge.

Kreber (2007) found that market demands and public concern over the quality of teaching in higher education precipitated the movement toward adopting SoTL. Because of this, higher education institutions throughout the U.S. have sought to institutionalize its acceptance, and slowly, this scholarship has gained greater recognition of its value across the disciplines (Witman & Richlin, 2007). This is an important movement for higher education, particularly since women and faculty of color are among those with a primary scholarly interest in SoTL (Sax, Astin, Arredondo, & Korn, 1996).

A study by Maxwell and Ball (2010) examined faculty members' knowledge and perceptions of the scholarship of teaching and learning. The population of this study included 855 faculty in the College of Agricultural and Life Sciences at the University of Florida (UF), as well as the UF Emerging Pathogens, Genetics, and Water Multidisciplinary Institutes. They found that these faculty were not only largely unengaged in SoTL, but they were also unaware of

it. Faculty members largely felt that SoTL was generally perceived differently, despite not technically different than other forms of scholarship. The study revealed a disconnect between how faculty themselves perceived the scholarship of teaching and learning as valid scholarship and their perceptions of how others would value it in their tenure and promotion portfolio. The authors recommended further study to help to refine faculty perceptions about SoTL and provide insight into what could be done to increase the perceived value of engaging in it. The authors also recommended further study to determine faculty members' perceived motivation for and value of conducting work in the scholarship of teaching and learning.

Research conducted by Witman and Richlin (2007), assessed the status of SoTL across different disciplines, and found much variation among the disciplines studied both in how SoTL is both valued and interpreted. They noted that they first needed to explain the differences between *scholarly teaching* and the *scholarship of teaching and learning*, explaining that they differ in goals and in their final output (Witman & Richlin, 2007).

Scholarship of Discovery

The scholarship of discovery is synonymous with basic research that expands or challenges current knowledge in a discipline. Boyer (1990) defined the scholarship of discovery as the generation of knowledge for knowledge sake; it is conducted to not only advance the field of knowledge but also to advance the intellectual climate. New knowledge generated by the scholarship of discovery is traditionally evaluated through the means of peer-reviewed journal publications.

Gibbons, Limoges, Nowotny, Schwartzman, Scott, and Trow (1994) emphasized that universities are no longer the only organizations conducting the scholarship of discovery, as it is increasingly being conducted also by government agencies, industrial laboratories, and non-

university institutes, so that "the university must enlarge its view of its role in knowledge production from that of being a monopoly supplier to becoming a partner in both national and international contexts (Gibbons, Limoges et al., 1994, p. 156)."

Scholarship of Application or Engagement

The scholarship of application or engagement, referred to as the scholarship of extension/professional practice at Iowa State University, seeks to solve real-world problems with the application of knowledge and directly links other forms of scholarship with practice (Hall, 2001; Glassick, 2000; Shapiro and Coleman, 2000). The scholarship of application reaches into the community beyond the academy and is more than public service and outreach. What has been traditionally viewed as public service and outreach emphasizes a “one-way” public delivery of knowledge and service. The scholarship of application or engagement is a “two-way” public interaction to address societal concerns (Boyer, 1996; Kellogg Commission, 1999). It is the concept of scholarship when service is directly related to the professor's field of expertise and is an extension of their scholarly knowledge.

Hall (2001) stated this scholarly activity provides for dynamic creativity, helps craft public policies, provides the opportunity to put theory into practice and have both renew the other, and permits "the academic world to climb down from its ivory tower.” Application scholarship helps the academy avoid irrelevance.

National organizations throughout the United States have legitimized the scholarship of application or engagement. According to Sandman and Weerts (2006), thirty-eight national organizations have called for greater public engagement of higher education. The Carnegie Foundation for the Advancement of Teaching developed a new classification in 2006 to recognize institutions that align with Carnegie's commitment to public engagement's ideals.

Carnegie recognizes these as publicly-engaged institutions, and defines community engagement as the "collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity" (Carnegie, 2006). The North Central Association of Colleges and Universities has now also included engagement as an institutional quality indicator (Higher Education Learning Commission, 2006).

Similar to the other "new" domains of scholarship, the institutional, disciplinary, and departmental culture can either promote or interfere in the recognition of the scholarship of application or engagement. KerryAnn O'Meara (2005), a reviewer of this study's instrument, discovered during her promotion and tenure research that "many faculty hold values and beliefs about service scholarship that doubt and devalue its scholarly purpose, nature, and products" (p. 76).

In a study by Sandman and Weerts (2006), leadership was identified as a critical lever to facilitate institutional adoption of the scholarship of engagement in land-grant institutions. Leadership was particularly critical in two key aspects: a) aligning resources with supportive structures to promote engagement and (b) communicating the value of engagement to both internal and external stakeholders. Sandman and Weerts (2006) found promotion and tenure policies were the strongest barrier to community engagement, particularly among the land-grant institutions.

According to the literature, the faculty who more commonly engage in the scholarship of application or engagement are also those who are the most marginalized within academic culture—i.e. women, faculty of color, faculty from professional schools, and assistant professors (Antonio, Astin & Cress, 2000; Bellas & Toutkoushian, 1999).

Scholarship of Integration

The scholarship of integration relates to making connections across disciplines and shaping a more integrated use of knowledge. This form of scholarship is what has become increasingly known as interdisciplinary research. The basic premise is that integrated knowledge from different disciplines creates fresh and different perspectives on significant ideas and theories (Shapiro, 2000). Boyer deemed the scholarship of integration as the type of scholarship most relevant to the time in which we now live.

> I am convinced that…in the twenty-first century, at the very time that we talk about specialization, we will begin to see patterns of great convergence. …I think the challenge of the next century is not only the discovery of knowledge, but putting those discoveries into a larger pattern and perspective. (Boyer 1994, p. 118)

Iowa State University does not recognize the scholarship of integration as a form of scholarship distinct from the scholarship of discovery (https://www-provost.sws.iastate.edu/sites/default/files/uploads/fh/Faculty%20Handbook%20-%20January%202014%20final%20(2).pdf). Thus, I did not address it in this study.

Scholarship and Faculty Characteristics

Researchers have also examined how some of the characteristics that differentiate faculty (such as discipline, career stage, or demographics) interact with scholarship and reward systems to influence faculty behavior (Clark, 1987).

Race/Ethnicity

Interestingly, the review of the literature found that diverse populations of faculty, in particular, are interested in pursuing what they perceive to be more meaningful scholarship than basic research. Helen Astin, professor emeritus at UCLA and author of *Race and Ethnicity in the*

American Professoriate, stated, "It is disheartening that higher education has not done a better job in recruiting and sustaining a more diverse group of people for its faculty ranks, especially when faculty of color have shown greater commitment to what the public says it wants from its colleges: more attention to undergraduate education and greater service to the community (www.gseis.ucla.edu/heri/race_pr-95.html)." According to Antonio (2002), faculty of color were seventy-five percent more likely than Caucasian faculty to pursue an academic position with the ideal of using their position to effect societal change. Patterns of work and career satisfaction and dissatisfaction are evident among faculty of color.

Trower and Bleak (2004) found that faculty of color were significantly less satisfied than white faculty with clarity of expectations for tenure and types of evidence required for tenure decisions; confidence that tenure decisions were based on performance rather than politics, relationships, or demographics; pressure to conform to departmental colleagues' political views; and influence they felt they had on their research focus. However, Umbach (2006) observed that only 9 percent of all college faculty in1983 were of color. In 2003, the estimate was 14 percent, which was an improvement, but not a very significant improvement over 20 years.

Gender

Research also suggests that gender plays a role in the choice of scholarly domains. Nationally, women comprise 43% of the faculty (West & Curtis, 2006). Many women desire to use their scholarship to uplift other members of their race and/or gender; to solve social, economic, and educational problems; and to make research useful for the public (Chepyator-Thornson & King, 1996). However, the literature revealed that what is traditionally viewed as scholarship by faculty of color and women is often not viewed as "legitimate" scholarship (Terosky, Phifer, & Neumann, 2008). Unfortunately, they hesitate to conduct scholarship

outside of the traditional domain because their work would not fit the scholarly model considered acceptable by white males and are "not easily or appropriately evaluated by traditional measures (Exum, 1983, p. 395)." To add insult to injury, a study of ten Association of American Universities institutions revealed that female faculty trail males and minorities trail non-minorities in the rates at which they achieve tenure (Dooris & Guidos, 2006). With regard to rank, scholars have noted that women have historically faced challenges in entering academe and moving up from lower ranks (assistant or associate) to higher ranks (full or senior) (Glazer-Raymo, 1999; Harding, 2008; Neumann, Terosky, & Schell, (2006); Perna, 2005; Terosky, Phifer, and Neumann, 2008). In the early 80s, 68% of men and only 38% of women were granted the holy grail of tenure in research and doctoral institutions (Russell, 1991). Research from a HERI national survey indicated that "…male assistant professors are 23 percent more likely to earn tenure than females, and that male professors are 35 percent more likely than female professors to be promoted to professors each year after tenure is earned (Williams, Alon, and Bornstein, 2006, p. 80)."

Length of Time Since PhD Completion

The length of time since a faculty member completed their PhD could also influence decision to pursue Boyer's "new" domains of scholarship. Ryder (1965) notes that individuals learn accepted norms that are prevalent during their formative stages of development, specifically graduate education. It was inferred that the earlier an individual completed his/her graduate education, the more likely s/he is to have been exposed to, and adopted, the traditional norms of science. On the other hand, the more recently an academician has been trained, the more likely s/he has been exposed to Boyer's domains of scholarship.

Individual Value for the Scholarly Domain (Self-Knowledge)

Rokeach (1973) found that values influence behaviors. Blackburn and Lawrence (1995) described individual values as self-knowledge, whereas departmental values are described as social knowledge. Blackburn and Lawrence found the influence of self-knowledge and social knowledge on general publication productivity of college and university faculty. Braxton et al. (2002) indicated individual values may also then influence the involvement of faculty in the various domains of scholarship. Interestingly, individual value was not included in their regression model, but this study does include it.

Scholarship and Institutional Characteristics

Discipline

It is imperative for this study to recognize that faculty members work within several cultures simultaneously: disciplinary, institutional, and departmental (Austin, 1990; Bergquist, 1992; Clark, 1984). The disciplinary culture connects faculty throughout higher education in similar fields; the institutional culture connects faculty across all disciplines and departments within a higher education institution; and the departmental culture is a product of the intersection of the disciplinary and institutional norms and values within a department.

Disciplines are the "primary units of membership and identification within the academic profession" (Clark, 1987, p. 7). Various researchers have categorized disciplines to differentiate among them. This study, similar to that of Braxton et al.'s (2002), uses Biglan's method of classification. Biglan's method of classification is premised on the idea that there is varying consensus among disciplines. Biglan surmised that faculty consensus could be summarized among three dimensions; the applied/pure dimension, the hard/soft dimension, and the life/nonlife dimension. The hard/soft dimension is premised on the level of typical development

within a field. Disciplines with high typical, or paradigmatic, development like engineering, biology and chemistry are considered hard disciplines while those disciplines with lower levels of typical development are considered soft disciplines, like economics, psychology and history.

These various disciplines differ in their cultures in a range of ways, including the questions asked, the quality criteria used to assess work, the patterns of publication, and in how faculty interact (Austin, 1990; Becher, 1981; Clark, 1984; Kuh & Whitt, 1988). Of particular relevance for this study were the variations in disciplinary cultures in the ways Boyer's domains of scholarship are valued and recognized.

Braxton and Hargens (1996) found that faculty in high-consensus disciplines, with clearly-defined paradigms, are more research-oriented, and, thus, generate publications at a higher rate. These disciplines were classified by Biglan (1977) to be considered hard disciplines. Faculty in low-consensus disciplines, on the other hand, are more predisposed to teaching, and, thus, spend more time on their teaching (Braxton & Hargens, 1996). Biglan categorized these disciplines as soft disciplines. Disciplines more predisposed to be research-oriented would be thought to be less predisposed to alternative scholarly domains, while the soft disciplines, those more predisposed to teaching, would be thought to engaged more in alternative scholarly domains, particularly the scholarship of teaching and learning.

Faculty Rank

Findings from previous studies indicated that Assistant Professors were more likely to conduct the Scholarship of Engagement in particular (Antonio, Astin, & Cress, 2000; Bellas & Toutkoushian, 1999).

Institutionalization of Change

Institutionalization has been defined by Clark (1971, p. 75) as "the process whereby specific cultural elements or cultural objects are adopted by actors in a social system." Curry's (1991) model of innovation includes three levels of institutionalization: structural, procedural, and incorporation or institutionalization, in which the importance of the third stage, institutionalization, is stressed to sustain institutional innovations. At the structural level, there exists a basic understanding of behaviors associated with the change and those involved understand how to conduct the behaviors. Some form of measurement also exists for assessing how the individuals perform the behaviors. At the procedural level, policies and behaviors associated with the behavior are common. At the third and final stage, the change is embodied in the values and norms (the culture) of the institution (Curry, 1991). It is through socialization that faculty learn and understand the norms for success.

Faculty Socialization

Since values and beliefs are so integral to institutionalizing change in higher education, a review of the faculty socialization literature is appropriate. There are various ways to define socialization; this study uses the definitions of Merton (1957), Tierney and Bensimon (1996), and Schein (1968). Merton (1957) describes socialization as a process by which individuals acquire the values and norms needed to function. Schein (1968) describes organizational socialization as the process of being taught what is important in an organization or within one of its subunits. The socialization process occurs both in school and again when the graduate begins their first job (Schein, 1968). Tierney and Rhoads (1994) confirmed Schein's observations, applied it to faculty, and described socialization as taking place in two stages: anticipatory and organizational. Anticipatory socialization occurs during graduate school, and entails the student

assimilating to the norms of the organization (Tierney & Rhoads, 1994). Exploring the two general stages of faculty socialization within this study, they identified several concerns regarding women in academia: "…inadequate anticipatory socialization, weak mentoring relationships, and fewer networking opportunities (Tierney & Rhodes, p. 76)." Also, new faculty may struggle during the organizational socialization stage to understand the culture of the organization, producing higher levels of stress in the early years. This stress level is increased when new faculty have no formal or informal methods of learning the values and norms, a situation all too common that can generate uncertainty, and thus greater stress, in new faculty (Tierney & Rhoads, 1994).

Tierney and Bensimon's (1996) perspective of faculty socialization was included also since they define it within the context of higher education. Specifically, they describe it as the rite of passage that starts in the faculty member's probationary term and ends, ideally, with the granting of tenure or, if unsuccessful, with termination.

A study by Clark and Corcoran (1986) described socialization as a developmental process that includes individual choice in the first stage, doctoral mentorship that facilitates anticipation of the emerging identity in the second stage, and full internalization of the role functions leading to a successful faculty career in stage three (Clark & Corcoran, 1986). Stage three socialization is the process through which institutional missions and faculty role priorities are conveyed to faculty members in academic departments.

Social Learning Theory

According to Bandura (1986), when faced with uncertainty about how to become socialized to a culture, social learning theory posits that individuals will model the behaviors of referent others (Bandura, 1986). In other words, human behavior is learned through interaction

and observation of others in a social context (1977, 1986). It is through the observation of other people's actions and consequences (in the context of this study, scholarship and its rewards), that individuals acquire rules and develop their own hypotheses about which responses are most appropriate (Bandura, 1977). The occurrence of social learning activity is demonstrated in numerous prior studies as individuals draw conclusions about the value of various behaviors by observing the decisions of their peers (Glaeser, Sacerdote, & Scheinkman, 1996; Duflo and Saez, 2000; Sorensen, 2001). Another critical aspect of social learning theory is that observation also teaches us the likely consequences of various behaviors. Bandura refers to this as vicarious reinforcement.

As early as 1983, Austin and Gamson offered the observation that reward systems can be significant sources of extrinsic motivation. They found that as faculty receive positive reinforcement by way of awards, travel funds, professional development monies, merit pay, and promotion, they are in effect socialized toward the types of behavior the rewards recognize—as legitimate or as desirable.

Based on the above information regarding observation, modeling and reward (Bandura's social learning theory), it was posited faculty would be more likely to want to engage in Boyer's other domains of scholarship in the future when they observe other faculty in their departments also engaging in the "new" domains of scholarship, and perceive they will be rewarded in tenure and promotion decisions. Thus, social learning theory was selected as the theoretical framework for departmental socialization.

Relevant Institutionalization Research Studies

Braxton, Luckey and Helland (2002) found that despite the merit of Boyer's work, little or no empirical research had addressed the important question as to the extent faculty actually

engage in scholarship in each of the four domains. They wanted to use this research to gauge the extent that universities had actually institutionalized the four domains of scholarship. The definition of institutionalization they used is "the process whereby specific cultural elements or cultural objects are adopted by actors in a social system" (Clark, 1971, p. 75). Braxton's team completed a national study of 1,424 faculty members in five types of colleges and universities from four different types of academic disciplines to assess the various levels of Curry's 1991 model of institutionalization. As stated previously, Curry (1991) finds that institutionalization occurs on three levels from lowest to highest: structural, procedural, and incorporation. Structural institutionalization is when a basic knowledge of behaviors connected with the object of institutionalization. Braxton et al. (2002) used general levels of faculty engagement in the scholarly domains as a proxy for structural level incorporation; procedural institutionalization is when activities associated with the innovation become standard operating procedure; when scholarship is aligned with the institutional mission; and incorporation takes place when the innovation becomes part of the institution's culture. Braxton's team contended that institutionalization can only be sustained when all three levels are attained.

The team reached the following conclusions: (1) all four domains of scholarship have been institutionalized at the structural level; (2) both the scholarship of teaching and discovery have achieved institutionalization at the procedural level, but the scholarships of application and integration have merely made progress toward this level of institutionalization; (3) institutionalization at the incorporation level can only be attained if necessary changes occur in graduate education and the assessment of faculty work for promotion and tenure; and (4) the scholarship of discovery still persists as the preferred domain of scholarship across the spectrum of various types of institutions of higher education.

A later study by Diamond (2002) found that the institutionalization of Boyer's domains of scholarship varies greatly from systemic changes to the faculty reward system, to functioning in much the same manner that was in place in the 1950s, to even becoming narrower in their approach to scholarship. He cites several reasons why institutionalization has not been greater, including 1) some faculty perceive broadened definitions of scholarship as a threat to their power and resources; 2) some administrators and faculty view placing greater value on applied research, teaching and service as potentially harming to the institution's or their program's prestige, and 3) image.

O'Meara (2002a, 2002b) evaluated the extent to which community engagement was recognized as a form of scholarship in promotion and tenure consideration by completing case studies at four colleges and universities. She reported that each of the four campuses had revised their promotion and tenure policies and were experiencing slight improvements in reward system balance, faculty involvement in the other domains of scholarship, and general faculty work life satisfaction.

O'Meara followed up this research with another major effort to answer the question of institutionalization with Rice; their book features essays about *Scholarship Reconsidered* that demonstrate that many colleges have made substantive changes in tenure and promotion policies to expand their definitions of scholarship in accordance with Boyer (O'Meara & Rice, 2005). However, the essays were written by institutions that have changed their tenure and promotion policies and want to share their experiences, and changes in policies do not inherently result in changes in values and norms. The book also presents the results of an American Association of Higher Education (AAHE)-sponsored survey of chief academic officers (CAOs) on campuses throughout the United States. In late 2001 to early 2002, more than 700 CAOs completed the

survey regarding formal campus policy changes for the purpose of recognizing Boyer's domains of scholarship.

CAOs from reform institutions (where efforts were made in the previous five to ten years to support, recognize, and reward multiple domains of scholarship) were significantly more likely than their counterparts at non-reform institutions to also recognize and reward innovation. Reform institutions also indicated that the primary interests of new faculty recruits align with the institution's mission and vision, and that their institutions had found a greater balance in the promotion and tenure evaluation of teaching, research, and service (O'Meara, 2006). In contrast, CAOs at non-reform institutions were substantially more likely to indicate that faculty at their campuses wanted to shape their institutions more like their peer institutions, and found it hard to make changes that do not conform to norms at peer institutions (O'Meara, 2006).
O'Meara's (2006) research discovered that even when the institution's policy language incorporates the evaluation and reward of multiple forms of scholarship, the conscious and unconscious values and beliefs of the faculty facilitating the promotion and tenure system can interfere in the recognition of the newer domains of scholarship as, in fact, scholarly. Both Tierney's and O'meara's work highlights the significant role that values and beliefs (socialization) play in organizational culture change.

The Braxton, Luckey, and Helland (2006) and O'Meara (2006) studies are similar in that they both explored the institutionalization of Boyer's domains of scholarship; Braxton, Luckey, and Helland (2006) explored it from the perspective of faculty and O'Meara from the perspective of Chief Academic Officers. Braxton, Luckey, and Helland's study (2006) contributed significantly to the literature by creating faculty work constructs in each of the areas of scholarship. A limitation of these constructs, however, and one that the authors acknowledge, is

that the constructs do not capture the entire body of work related to the scholarship of teaching, application, and integration. O'Meara's (2006) was limited in that it only sought the perception of CAO's, as opposed to the faculty who are impacted by and involved in promotion and tenure decisions.

Summary

Almost twenty years later, little progress has been made in institutionalizing Boyer's three out of four domains of scholarship at the highest and sustainable level of institutionalization: incorporation. And yet, we see a continued need for blending of disciplines to address complex problems. There are increased calls for accountability and assessment that add to the demands for faculty to become more involved in our communities and with our undergraduate students.

Curry's (1991) model of innovation, the conceptual framework, stated that norms and values associated with the innovation must be embraced by members of the organization for change to be institutionalized. It is through socialization that faculty learn and understand the norms for success. Bandura's (1977, 1986) social learning theory, the theoretical framework, states that when faced with uncertainty about how to become socialized to a culture, social learning theory posits that individuals will model the behaviors of others through observation and modeling, taking into account the extrinsic rewards for the behavior (Bandura, 1986).

The costs are too great to continue down the same old path, particularly given that we know now female faculty and faculty of color are interested in pursuing these other domains of scholarship.

CHAPTER 3: METHODOLOGY

Overview

The purpose of this study was to investigate the relationship between the faculty characteristics of gender, race/ethnicity, time since completion of highest degree, personally held value for these alternative domains of scholarship; institutional characteristics of rank, tenure status and discipline; faculty socialization within the department; and the conduct of and desire to conduct Boyer's domains of scholarship. A description of the research questions, population and sample, instrument design, data collection, data analysis, limitations and delimitations, and anticipated ethical issues related to the study are presented.

The survey for this study was revised with immense assistance from the Center for Learning and Teaching (CELT) at Iowa State University (ISU), Ames. Iowa State University (formerly Iowa Agricultural College and Model Farm) was officially established on March 22, 1858 by the State of Iowa's legislature. The Iowa legislature voted to accept the provision of the Morrill Act in 1862. As a land grant institution, Iowa State University (ISU) focused on the ideals that higher education should a) be accessible to all and b) teach liberal and practical subjects. Iowa State was actively bringing knowledge to the people of Iowa even before the Smith-Lever Act of 1914 established the Cooperative Extension Service. The institution is a leader in agriculture, technology, science and art, and created the nation's first state veterinary medicine school in 1879. In 1959, the college was officially renamed Iowa State University of Science and Technology, which has led directly to many research patents and inventions. ISU now has approximately 33,000 students and over 100 buildings with world class programs in agriculture, technology, science, and art. It is considered a Very High Research Activity

Research University by the Carnegie Classification System and is a member of the prestigious Association of American Universities.

The Office of Community College Research and Policy (OCCRP) at ISU provided support for the Qualtrics Survey Software used to create and administer the survey. All data was kept on a secure server.

Research Questions

The following research questions guided the study:

1. What are the demographic characteristics of all faculty respondents and those faculty who want to conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (SEPP) in the future?
2. How does tenure status compare by gender and are there significant differences in tenure status by males and females?
3. How does Rank compare by gender and are there significant gender differences among rank?
4. Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship between genders?
5. Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks?
6. Does departmental socialization serve as a predictor of the desire to conduct the scholarship of teaching and learning and the scholarship of professional practice?

Hypotheses.

Hypotheses are presented for research questions two, three, four, five, and six. Question one does not require a hypothesis because it was descriptive in nature.

- Hypothesis for Research Question #2: There is no significant difference in tenure status between genders
- Hypothesis for Research Question #3: There is no significant difference in gender among faculty rank
- Hypothesis for Research Question #4: There is no significant difference in the conduct of and desire to conduct Boyer's alternatives forms of scholarship between females and males
- Hypothesis for Research Question #5: There is no significant difference in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks.
- Hypothesis for Research Question #6: There is no relationship between departmental socialization and the desire to conduct Boyer's alternatives domains of scholarship.

Research Design

To address the research questions, the study was conducted in four phases: Phase 1, the examination of relevant literature and consultation with CELT and other experts to determine if existing items and constructs should be modified or deleted, and which additional questions/constructs should be added to the instrument; Phase 2, the vetting of the instrument with 2 nationally known experts in faculty scholarship and higher education, and the resulting survey revisions; Phase 3, pilot survey administration to 10 faculty to further test the face validity of the revised instrument and the subsequent final instrument revisions; and Phase 4 the administration of the revised survey to the population of full-time tenured, tenure-track and non-tenure-track faculty at Iowa State University (see Figure 3 for an illustration of this process).

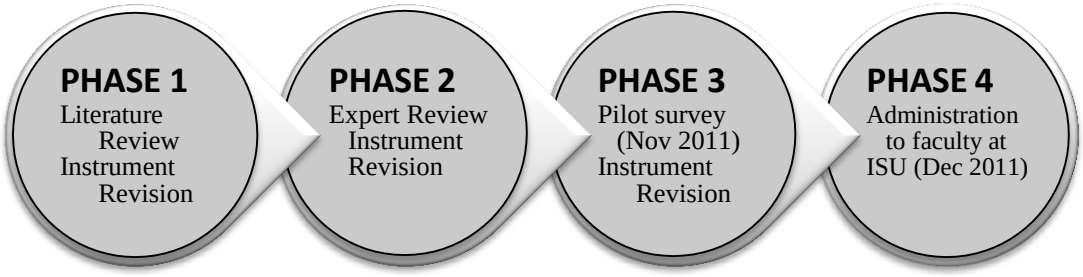

Figure 3. Phased research design

Population and Sample

The population for this study was comprised of all full-time university faculty members holding tenured, tenure-track, or non-tenure-track academic appointments at Iowa State University. The entire population comprised the sample.

Instrument Development

Data was collected using a survey instrument, "Institutionalization of Alternative Forms of Scholarship at a Research Intensive Institution," that was a modification of Braxton et al.'s 2002 effort to assess institutionalization of Boyer's model.

There were few quantitative assessments in the field of Boyer's scholarship model, and even fewer focused on institutionalization from a faculty perspective. The institutionalization research that does exist indicated that little institutionalization has in fact occurred, yet even less is understood about why that might be. Graduate education has been pointed to as a possible reason, since faculty are not prepared for work in these alternative domains during graduate school. However, neither are they generally prepared to teach effectively while in graduate

school, yet many faculty develop into effective teachers. It was posited this is due to the departmental socialization they receive.

The purpose of Braxton et al. (2002)'s original survey was to both determine to what degree each of the four scholarship domains had been institutionalized in higher education, as well as identify what factors impede successful institutionalization.

This survey was a national survey of 4000 faculty, including 200 individuals from each of four disciplines: chemistry, biology, sociology, and history. The study is widely recognized as a valuable resource in the field and cited extensively in the literature. The survey included professional behaviors from each of the four scholarship domains, developed previously from the work of Boyer (1990), Braxton and Toombs (1982), and Pellino, Blackburn and Boberg (1984).

The survey also measured faculty characteristics, including gender, race/ethnicity, year of receipt of doctoral degree, tenure status, and full- or part-time status. However, the survey had some limitations identified by the authors, including:

- The measures of scholarly products were not exhaustive of scholarship in the four domains. They were, however, determined to be face valid by two national experts. Further delineation was needed of scholarship in the creative arts in particular.
- The items reflecting unpublished scholarly outcomes should be revised in future drafts to ascertain that these outcomes are in a publicly observable form.

The original survey included questions relative to each of the sections below as identified in Table 1. The modified instrument included all scholarly outcomes and activities under one section, partially to address the recommendation of Braxton et al. (2002), but also for cleaner formatting.

The sections for individual and departmental statements were also retained, as was the section regarding demographic information. A new section was added to include two open-ended questions.

Table 1.

Comparison of Braxton et al.'s (2002) Instrument with Twait's Revised Instrument

Original Instrument	Modified Instrument
I. Unpublished Scholarly Outcomes	A. Scholarly Outcomes and Activities
II. Professional Publications	B. Individual Statements
III. Other Professional Activities	C. Departmental Statements
IV. Individual Statements	D. Open-ended Questions
V. Departmental Statements	E. Demographics
VI. Institutional Statements	
VII. Demographics	

Working with the Center for Excellence in Learning and Teaching (CELT) at Iowa State University, it was determined that the new survey instrument should make improvements in the following four areas:

Length

It was estimated that the initial revision of the instrument would take, on average, thirty minutes to conduct. It was determined that the survey would have to be substantially shortened so that faculty would be willing to respond. In the effort to reduce instrument length, Braxton et al. (2002)'s section in the original instrument on other professional activities was eliminated, as

the Center for the Excellence in Learning and Teaching (CELT) indicated these could not be counted as scholarship at Iowa State University. Several redundant questions and the section on institutional statements were also eliminated as unnecessary for the purposes of this study's research questions.

Nomenclature

As mentioned earlier, Braxton et al. (2002) recommended future iterations of the instrument include the term "publicly observable" in reference to the questions that addressed unpublished scholarly outcomes. However, CELT did not feel that was a term faculty at ISU would understand or sufficiently meet the definition of scholarship. Thus, the term "peer-reviewable" was included in the questions that addressed unpublished scholarly outcomes. Also, Braxton et al. (2002) did not refer to Boyer's specific forms of scholarship within the instrument, but since ISU has developed policies that recognize the Scholarship of Teaching and Learning and the Scholarship of Extension/Professional Practice, it was determined to include occasional reference to these to draw greater awareness to these forms of scholarship.

Scholarship of Integration

The Scholarship of Integration is not recognized as scholarship distinct from the Scholarship of Discovery at Iowa State University. Some of the items were still retained, but they were considered to be the Scholarship of Discovery.

Scholarship in the Creative Arts

As suggested by Braxton and his co-authors, items related to scholarly work in the creative arts were developed to make the instrument more inclusive of faculty scholarship across all disciplines.

Faculty Socialization

Items for the Faculty Socialization block were developed in consultation with a research methodologist from the University of Northern Iowa's Center for Social and Behavioral Research to reflect Bandura's social learning theory in relationship to departmental socialization for faculty scholarship. Bandura's social learning theory provided the theoretical foundation for faculty socialization in the study. According to Bandura (1986), when faced with uncertainty about how to become socialized to a culture, social learning theory posits that individuals will model the behaviors of referent others (Bandura, 1986). It is through the observation of other people's actions and consequences (in the context of this study, scholarship and its rewards), that individuals acquire rules and develop their own hypotheses about which responses are most appropriate (Bandura, 1977).

This study modified the conceptual framework of Braxton et al. (2002) to examine how faculty background characteristics, faculty characteristics within the institution and faculty socialization in the department factor into Curry's final stage from his 1991 Model of Innovation for the institutionalization of Boyer's scholarly domains. The conceptual framework was augmented by introducing departmental socialization as a possible new proxy for institutionalization of innovation in higher education. Braxton et al. (2002) posed graduate education, institutional culture, and academic reward as the proxies for institutionalization in their study. However, the three proxies alone seemed inadequate to better understand the institutionalization of Boyer's scholarship domains. Since the importance of graduate education socialization has already been long-established in the research literature, it was determined to primarily focus on academic reward (enhanced to more broadly become departmental socialization) as the proxy for institutionalization of Boyer's scholarship domains.

The conceptual framework is found in Figure 4.

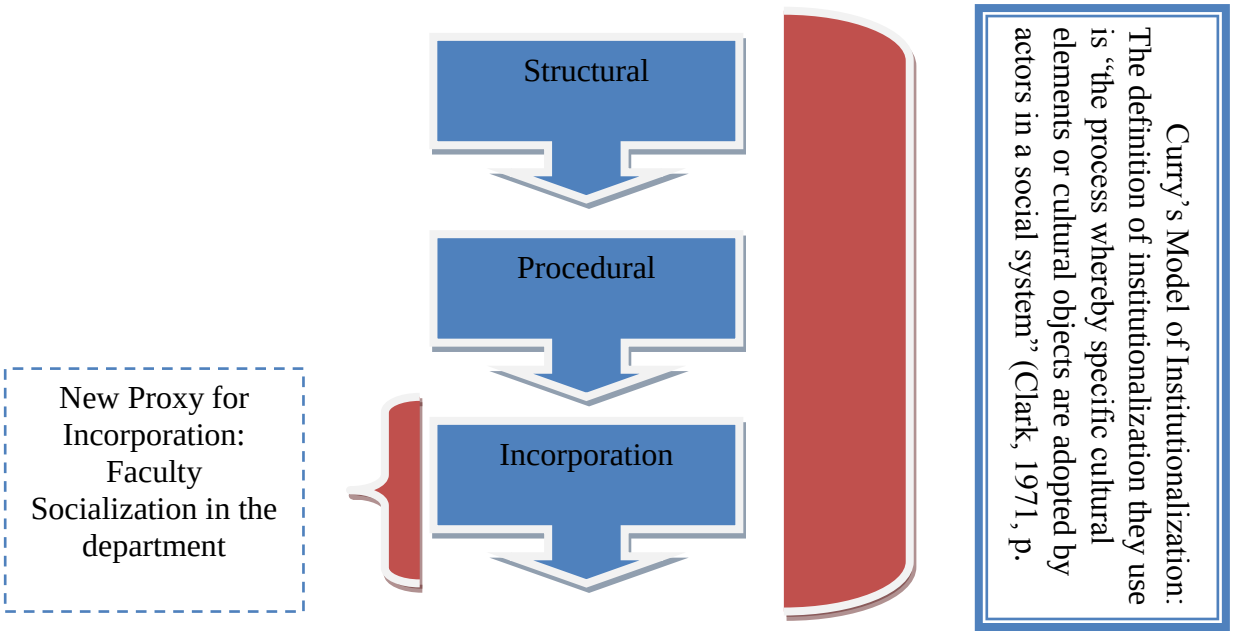

Figure 4. Conceptual framework for institutionalization of Boyer's scholarship domains

In addition to these changes, other questions were developed related to faculty desire to conduct the alternative forms of scholarship and two open-ended questions. The instrument was named "Institutionalization of Alternative Forms of Scholarship at a Research Intensive Institution" and is included in Appendix A.

Items fall into five sections including: 1) Scholarly Outcomes and Activities, 2) Individual Statements, 3) Departmental Statements, 4) Open-ended Questions, and 5) Demographic Information. The survey instrument predominantly included closed questions and contained two open-ended questions. A closed question is one that has pre-coded answers (i.e. a dichotomous question to which the respondent must answer yes or no). Through closed

questions, responses can be limited within the scope of this study. The questionnaire was structured in such a way that faculty were able to answer it easily, using the Likert scale format.

Dependent and Independent Variables

The research design for this study included four dependent variables and eleven independent variables. Two of the four dependent variables measured faculty involvement in the two forms of Boyer's scholarship model applicable to Iowa State University and were composite variables. Similar to the work of Braxton et al. (2002), the composite variables were computed by summing responses to each of the corresponding scholarship measures in Scholarly Outcomes and Activities and then dividing the sum by the total number of measures included in each variable. The other two dependent variables assessed faculty desire to conduct the two alternative forms of scholarship.

Scholarship of Teaching and Learning

Unlike Braxton et al.'s (2002) study, one dependent variable measured the extent to which faculty engaged in the scholarship of teaching and learning. Unpublished but peer-reviewable scholarly outcomes related to the scholarship of teaching and learning and publications related to the scholarship of teaching and learning all held as one composite measure

Scholarship of Application (Extension/Professional Practice)

Also unlike Braxton et al.'s (2002) study, one dependent variable measured the extent to which faculty engage in the scholarship of extension/professional practice, both published and unpublished but peer-reviewable.

Desire to Conduct the Scholarship of Teaching and Learning

This variable depicted faculty desire to conduct the scholarship of teaching and learning.

Desire to Conduct the Scholarship of Application (Extension/Professional Practice

This variable depicted faculty desire to conduct the scholarship of extension/professional practice.

Independent Variables

Eleven independent variables were included in the research design, including three variables and one composite measure addressing departmental socialization; four faculty background characteristics (gender, race/ethnicity, time since completion of highest degree, personally held value for these alternative domains of scholarship); and three institutional faculty characteristics (rank, tenure status and discipline).

Departmental Socialization

Departmental socialization was a block of three variables and a composite measure related to Bandura's social learning theory. The composite measure was developed from items in the Departmental Statements section using Exploratory Factor Analysis, and labeled "Perceived Departmental Reward." It was computed by summing responses to each of the items that loaded onto to this factor and then dividing the sum by the total number of items.

The independent variables used in this study were organized into three blocks:

Block 1—Faculty Background Characteristics

Block 2—Institutional Faculty Characteristics

Block 3—Departmental Socialization

The new conceptual model titled the "Twait Model for Institutionalization of New Domains of Scholarship (MINDS)," applied for the hierarchical regression analyses, is below.

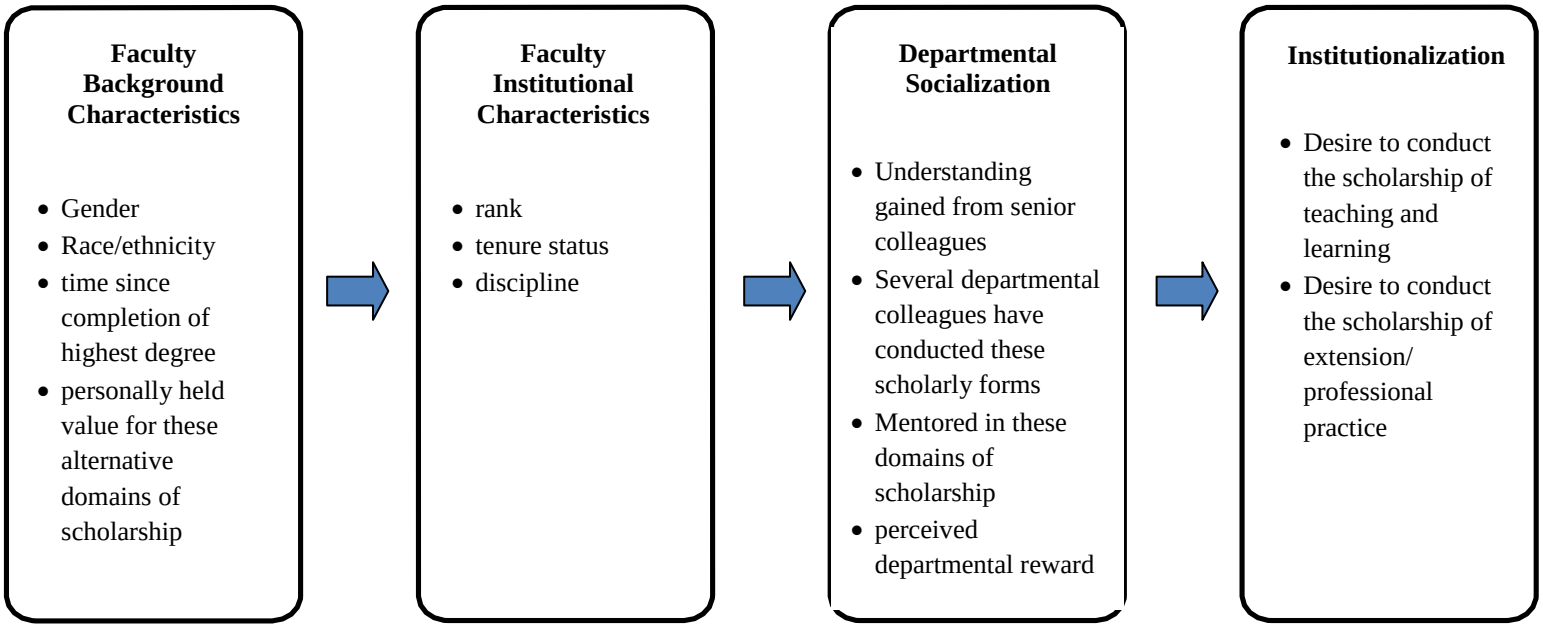

Figure 5. Twait's Model for Institutionalization of New Domains of Scholarship (MINDS)

The following list displays the variables and their coding used to answer the final research question.

Table 2.

Variables, Coding Scale, and Blocks for Hierarchical Regression Analysis 1 and 2

Variable	Coding/scale	Block	Regression1 or 2
Race	Dichotomous 1 = white 0 = non-white	1	1 and 2
Gender	Dichotomous 0=male 1=female	1	1 and 2
Time since highest degree earned	Continuous	1	1 and 2
I value the scholarship of teaching and learning	4-point scale 1=strongly disagree 2=disagree 3=agree 4=strongly agree	1	1
I value the scholarship of extension/ professional practice	4-point scale 1=strongly disagree 2=disagree 3=agree 4=strongly agree	1	2
Associate Professor	Dichotomous 1=Associate Professor 0=Not Associate Professor	2	1 and 2

Table 2. (Continued)

Variable	Coding/Scale	Block	Regression 1 or 2
Professor	Dichotomous 1=Associate Professor 0=Not Associate Professor	2	1 and 2
Tenure Status	Dichotomous 1=Tenured 0=Not Tenured	2	1 and 2
Biglan's Discipline	Dichotomous 1=Hard 0=Soft	2	1 and 2
Mentored	4-point scale 1=strongly disagree 2=disagree 3=agree 4=strongly agree	3	1 and 2
Perceived Dept Reward	Continuous	3	1 and 2
Several of my Colleagues have conducted SoTL or Scholarship of Professional Practice	4-point scale 1=strongly disagree 2=disagree 3=agree 4=strongly agree	3	1 and 2
I am learning what is expected through observation	4-point scale 1=strongly disagree 2=disagree 3=agree 4=strongly agree	3	1 and 2

The survey concluded with two open-ended questions: 1) What Factors influenced/contributed to their learning of the scholarly expectations of their department? and 2) Identify the barriers to conducting the scholarship of professional practice and the scholarship of teaching and learning. These questions were designed to allow survey respondents the opportunity to share their thoughts on the factors that influenced their ability to learn the scholarly expectations of the department, as well as identify any barriers that remain related to the institutionalization of these two alternative scholarly domains on campus.

Validity and Reliability

Validity

Validity denotes "correctness of measure" (Yaremko, Harari, Harrison, & Lynn, 1982, p. 245). The survey items must actually measure the identified items or constructs to be a valid instrument (Czaja & Blair, 2005; Ruane, 2005). The various types of validity most relevant to this study are content validity, construct validity, and face validity (Czaja & Blair, 2005; Galvan, 2006; Ruane, 2005). Content validity examines the extent to which the test items fully cover the content area of the construct to be measured (Yaremko et al., 1982). Content validity is a particularly important consideration when working with complex, multidimensional concepts (Ruane, 2005). Since the study included several composite measures, or constructs, construct validity needed examination. According to Dunn (1999), construct validity reflects how closely a researcher's operational definition of a variable corresponds with the theoretical meaning of the variable. An extensive review of the literature was conducted to establish the instrument's construct validity. A pilot test was conducted on the instrument prior to sending it to the targeted audience to ensure face validity. A psychometrician and national experts were also consulted to

validate both the content and construct of the survey instrument. Braxton et al. (2002) established face validity of the original instrument by having it reviewed by two national experts.

Following modification of the instrument, Eugene Rice was consulted as a faculty work and Boyer scholarship model expert. Dr. Rice has served as Director of the Faculty Forum on Roles and Rewards for the American Association of Higher Education. He previously served as Senior Fellow for the Carnegie Foundation on the Advancement of Teaching, where he was engaged in the national study on changing faculty priorities, a topic on which he has published extensively. Most notably, during his time at the Carnegie Foundation, he was a major contributor to the development of Ernest Boyer's *Scholarship Reconsidered.*

An additional Boyer's scholarship model expert consulted was KerryAnn O'Meara. Dr. O'Meara spent two years working as a Research Associate at Harvard University's Project on Faculty Appointments. Her research has been published in premier higher education journals: *Journal of Higher Education, Research in Higher Education, and Review of Higher Education*. Dr. O'Meara consults nationally with campuses on the revision of their reward system policies to incorporate multiple domains of scholarship.

The research methodologist consulted for social learning theory item development was Mary Losch, Professor and Associate Director of Center for Social and Behavioral Research (CSBR) at the University of Northern Iowa. Dr. Losch completed her PhD in psychology with a focus on social psychology. She has published extensively on survey methods and social science.

According to Frary (1996) instrument effectiveness is also affected by factors such as wording and ordering of questions. Brief and concise questions (Frary, 1996) are recommended to reduce uncertainty. The Center for Excellence in Learning and Teaching (CELT) at ISU

assisted in design to ensure the wording was concise and would represent the faculty and the scholarship cultural context of Iowa State University.

Reliability

Reliability "refers to the repeatability or dependability of measurement" (Lanyon & Goodstein, 1982, p. 140). To establish reliability and further establish validity, the questionnaire was administered to ten pilot faculty members in exactly the same way as it was administered in the main study. Informed consent was obtained by the faculty participants agreeing to a consent statement at the beginning of the survey and completing the online questionnaire. These subjects were asked to provide feedback to identify any ambiguities and difficult questions. The pilot study also assessed whether respondents objected responding to any of the question, and whether replies could be analyzed in terms of the research questions. Revisions were made to any questions that were ambiguous, difficult to answer, objectionable or did not allow for analysis of the research questions.

Internal consistency is a common test of reliability for survey instruments. While there are a variety of internal consistency measures, Cronbach's alpha is the most widely used (Galvan, 2006). This analysis considers the degree to which all of the items measure the same construct (Cronk, 2006). Cronbach's alpha scores range from 0.00 to 1.00, with values at or above .75 generally considered to indicate adequate internal consistency reliability (Galvan, 2006).

Data Collection and Management

The study used first-hand data that came from faculty respondents. Qualtrics Survey Software was used to create, distribute, collect and aggregate the data collected for this research. Following approval by the Institutional Review Board for the study, an introductory email notification about the survey was sent to the potential respondents containing a cover letter to

inform the participants about their selection to participate in this voluntary study, the confidentiality of their participation, and the purpose of the study and its potential usefulness. A week after the introductory notification, the same cover letter and a link to the Qualtrics questionnaire with detailed instructions was emailed to the participants. There was no identifying information on the questionnaire, but Qualtrics was able to identify the respondents who returned their completed questionnaire. This approach provided (1) anonymity to the subjects, and (2) a method for following up with nonrespondents. It was assumed that the participants who responded to the survey confirmed their informed consent. Sample correspondence with participants is included in Appendix B.

The electronic survey instrument was enclosed as a link in an email to faculty members in December, 2011. Faculty members were given a deadline of January, 2012 to complete and submit the survey. The instrument was accompanied by a cover letter from the Director of the Center for the Enhancement of Learning and Teaching (CELT) at ISU and the Chair of the Faculty Senate, inviting faculty members to participate in the study and indicating why the study was important. The e-mail also included the contact information for the principal investigator and the ISU faculty member supervising the study, Dr. Frankie Santos Laanan. Two reminder e-mails were sent to nonrespondents at intervals in December and January to elicit greater response.

The multiple contacts procedure used with respondents in this study was appropriate according to Dillman (2007). He states that multiple contacts with web and internet survey respondents is the most effective way to increase the response rate. Dillman, Smyth, and Christian (2009) stated that the optimal timing sequence to contact the respondents in web or internet surveys depends on the nature of the survey and the population surveyed. Dillman et el.

(2009) thus emphasized that there is no fixed rule for the time interval between two contacts or reminders. Survey data was exported from the Qualtrics Survey Software to Statistical Package for Social Sciences® (SPSS) software upon receipt and stored on a secure server.

Data Analysis Procedures

This study uses descriptive analyses (frequency and cross tabulation data), t-tests, one-way ANOVA tests, exploratory factor analysis, and a hierarchical regression model to understand the relationship between faculty characteristics; faculty socialization in the department; and faculty conduct and desire to conduct Boyer's alternative forms of scholarship.

Descriptive statistics

The Statistical Package for Social Sciences® (SPSS) for Windows® software was used to conduct the statistical analysis for the study. SPSS is a comprehensive system for analyzing data and provides information on trends, descriptive statistics and complex statistical analyses. In an effort to address research questions 1-4, descriptive statistics were generated to examine background characteristics including gender, race/ethnicity, rank, tenure status, time since highest degree completion, and discipline of all faculty respondents; as well as just those conducting and desiring to conduct scholarship in each of the two applicable alternative scholarship domains at Iowa State University.

Independent Samples T-test and One-way ANOVA

To test the Research Questions: *Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship between genders?* and *Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks?* An independent samples t-test and analysis of variance (ANOVA) comparison of means were used (level of significance, $\alpha = .05$) to determine

whether there are statistically significant differences between females and males and their conduct of and desire to conduct Boyer's alternatives domains of scholarship, as well as statistically significant differences among faculty ranks. The resulting significance value was used to interpret whether a relationship existed between the variables. A relationship indicates the differences in means are not because of chance. For this research study, alpha was set at .05; thus, a significance level of $p < .05$ resulted in a rejected hypothesis.

Exploratory factor analysis

To examine departmental socialization for Boyer's scholarship domains, various questions were selected from the Departmental Statements section that were developed to address Bandura's social learning theory in relation to Boyer's alternative forms of scholarship**.** An exploratory factor analysis was conducted to determine if constructs could be formed related to socialization in the department. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to examine the suitability of variables within the factor analysis. According to Tabachnick and Fidell (2007), values of .6 and above are required for a good factor analysis. Values below .5 imply that factor analysis may not be appropriate. As a value approaches 1.0, it can be inferred that correlations between variables are small (Tabachnick & Fidell, 2007, p. 614). Therefore, all items with loadings above .6 were chosen to be included in the constructs that were formed during this analysis. Constructs with alpha reliability scores above .70 (Litwin, 1995) were used to create the model for the present study.

Multiple regression analysis

In an effort to address Research Question 6: *Does faculty socialization in the department serve as a predictor of the desire to conduct Boyer's alternative types of scholarship?* A hierarchical linear regression analysis was conducted to assess the predictive capabilities of the

departmental socialization block on the desire to conduct the two domains of scholarship. According to Tabachnick and Fidell (2007), multiple regression analysis enables the researcher to assess the relationship between one dependent variable and several independent variables. This analysis is used to predict and assess the relationship between the dependent and independent variables.

A scatterplot of scores was used to determine if the data was linearly or curvilinearly related–that is, to test the assumption of homoscedasticity. This assumption means that the variance around the regression line is the same for all values of the predictor variable (X). Next, a *p* value of .05 was established. The *p* value is the likelihood that a certain result occurred by chance.

Predictor variables from the new conceptual model were entered into the hierarchal regression equation in three blocks (see Figure 6). The first block was comprised of faculty demographic variables of gender, race/ethnicity, individual value for each scholarly domain and time since highest degree completion. The second block was comprised of faculty characteristics within the institution: rank, tenure, and Biglan's classification of hard or soft discipline. Finally, the third block included the departmental socialization items from Bandura's social learning theory: a construct of perceived departmental reward, observation, modeling and mentoring. The perceived departmental reward construct was determined using exploratory factor analysis.

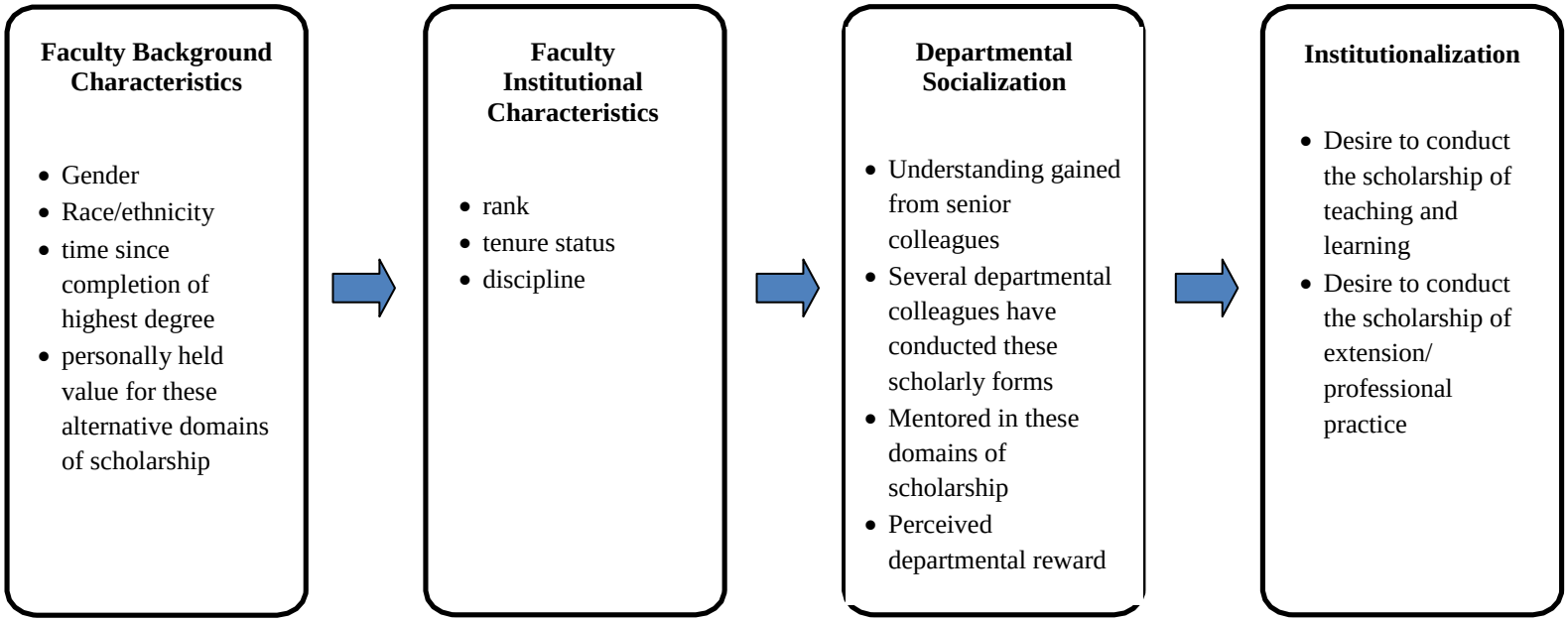

Figure 6. Model for Institutionalization of New Domains of Scholarship (MINDS)

Qualitative Analysis of Open-ended Questions

The two open-ended questions in the instrument, provided below, were qualitatively analyzed for themes that emerged from the responses:

1. What factors influenced/contributed to your learning of the scholarly expectations of their department?
2. What barriers exist conducting the scholarship of professional practice and the scholarship of teaching and learning?

The analysis of qualitative data has been described as:

• "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh & Shannon, 2005, p.1278)," and

• "any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings (Patton, 2002, p.453)."

These two definitions demonstrate that qualitative data analysis is more than counting words or mining content from texts to identify evident or underlying themes. It permits researchers the ability to make sense of social reality in a subjective but scientific manner.

To make sense of the social reality of the faculty respondents related to scholarship, the raw data from the two open-ended questions was condensed into themes through inductive reasoning, by which themes emerge through the researcher's examination and consideration.

Ethical Considerations

Compliance of all Institutional Review Board regulations, confidentiality requirements, and data security measures were adhered to for this study. An application to complete research

involving humans was approved by the Iowa State University Institutional Review Board (IRB) Office in March 2011 "Appendix C: IRB Approval" contains the IRB approval form from Iowa State University's Office for Responsible Research. All protocols were followed to ensure database security and anonymity of faculty respondents.

Limitations of the Study

A limitation of this study was that the data was collected at one homogeneous institution. Despite that limitation, this analysis offers insights for other universities in their quest to better understand the institutionalization of Boyer's domains of scholarship. It would be important, however, that results of this study not be generalized to other states or other institution types without additional testing of the instrument within these settings.

An additional limitation was despite multiple recruiting contacts, the response rate for the present study was twenty-one percent.

When investigating departmental socialization for scholarship, it was difficult to develop enough items to operationalize Bandura's social learning theory for construct creation, yet minimize the length of the instrument. "Perceived reward" became a construct through factor analysis, but observation and mentoring were entered as individual items into the model as part of the departmental socialization block. Thus, an additional limitation of this study was the difficulty of identifying items for the first time in the faculty scholarship literature which define departmental socialization.

Delimitations of the Study

To address research questions four, five and six, clinicians and lecturers were delimited (excluded) from the study. Clinicians were removed since only four clinicians responded to the study. Research questions four and five explore the differences between gender and among

faculty rank in the conduct of and desire to conduct these alternative scholarly domains. Since Lecturers do not have the same scholarly expectations as tenured and tenure-track faculty, they were removed from the dataset for these research questions. Research question six relates to departmental socialization's influence on the desire to conduct these alternative domains of scholarship. Since lecturers do not have the same scholarly expectations and are not impacted by promotion and tenure criteria, the decision was made to delimit them from the study for this question also. By delimiting a total of 51 lecturers and clinicians from the original dataset of 346 respondents, the new dataset for these last two questions consisted of only tenured and tenure-track faculty.

Summary

This chapter highlighted the methodological approach employed in this study. The research questions, hypotheses, research design, setting, population, data collection, variables, and analysis were outlined. The ethical considerations, as well as the limitations and delimitations of the study were also stated. The next chapter discusses the results of the analyses.

CHAPTER 4: RESULTS

Overview

This chapter provides a synopsis of the quantitative and qualitative results of the study. The chapter is divided into five sections. The first section describes the data collection and the subsequent section examines the demographics of faculty who desire to conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice. The third section discusses the results of the inferential research questions that were chosen to guide the framework of the study. Section four provides the qualitative analysis of the open-ended questions. Finally, the last section provides a summary of the chapter.

Data Collection

In order to address the research questions, an online survey was developed and administered for the targeted unit of analysis, full-time faculty at Iowa State University. The population for this study was comprised of all 1609 full-time university faculty members holding tenured, tenure-track, or non-tenure-track academic appointments at Iowa State University.

Instrumentation

Data were collected using a survey instrument, "A Cultural Assessment of Non-traditional Scholarship," that built off of previous efforts to assess the institutionalization of Boyer's scholarship model.

There were few assessments in the field of Boyer's scholarship model, and even fewer focused quantitatively on institutionalization from a faculty perspective. Braxton et al.'s 2002 instrument used to explore the institutionalization of Boyer's four scholarship domains was selected to replicate with modification. The original survey included professional behaviors

from each of the four scholarship domains, developed from the work of Boyer (1990), Braxton and Toombs (1982), and Pellino, Blackburn and Boberg (1984). The survey also measured faculty characteristics, including gender, race/ethnicity, professional age, discipline, and tenure status. The survey was modified to address some of the limitations Braxton et al. (2002) identified from their instrument, including the addition of scholarship in the form of creative activity and the language of publicly-observable in reference to the scholarly activities section of the survey. Further modifications included the addition of items to address departmental socialization and the understanding of the difference between Scholarly Teaching and the Scholarship of Teaching and Learning. The instrument mostly collected quantitative data, which were analyzed utilizing the *Statistical Package for the Social Sciences* (SPSS) computer software. Qualitative data were grouped into themes.

Collection

An introductory email notification about the survey was sent to the potential respondents containing a cover letter to inform the participants about their selection to participate in this voluntary study, the confidentiality of their participation, and the purpose of the study and its potential usefulness. A week after the introductory notification, the same cover letter and a link to the Qualtrics questionnaire with detailed instructions was emailed to the participants. There was no identifying information on the questionnaire, but Qualtrics was able to identify the respondents who returned their completed questionnaire. This approach provided (1) anonymity to the subjects, and (2) a method for following up with nonrespondents. It was assumed that the participants who responded to the survey confirmed their informed consent.

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While originally seeking responses from the whole body of full-time faculty (1609), the response rate was 22% (n=346). To control for non-response error, early and late responders were compared. These comparisons were made on the assumption that those participants that respond later, often after additional requests for participation, are more like non-responders (Armstrong & Overton, 1977). After comparison, no significant differences existed between the groups, therefore there was no reason to believe that non-respondents were different than respondents.

When the dataset was delimited to examine the profile of faculty wanting to conduct the scholarship of teaching and learning in the future, the results determined that 212 of the 346 faculty respondents desired to conduct the scholarship of teaching and learning in the future, comprising 68% of the faculty respondents. The entire dataset was also delimited to only those respondents wanting to conduct the scholarship of extension/professional practice in the future to examine the profile of these faculty. The delimitation determined that 180 of the 346 (52%) faculty respondents desired to conduct the scholarship of extension/professional practice in the

future. The original dataset was also delimited to tenured and tenure-track faculty only to explore research questions four, five, and six.

Research Question 1: Demographic profiles of all faculty respondents and those faculty who desire to conduct the Scholarship of Teaching and Learning and the Scholarship of Professional Practice

Table 3.

Background Characteristics of All Respondents (N=349)

Variable	*n*	%
Gender		
Male	197	56
Female	152	44
Race/ethnicity		
Non-Minority	285	88
Minority	38	12
Tenure Status		
Tenured	239	70
Non-Tenured	103	30
Discipline		
STEM based	170	50
Arts	15	4
Other	38	11
Humanities based	40	12
Social Sciences	77	23
Highest education level		
Bachelor's degree	1	.03
Master's degree	41	12
PhD	286	87

Table 4.

Background Characteristics of Respondents by Desire to Conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (N=180)

	SoTL (N=212)		Scholarship of Extension/ Professional Practice (N=180)	
Variable	*n*	%	*n*	%
Gender				
Male	112	53	96	53
Female	100	47	84	47
Race/ethnicity				
Non-Minority	178	87	147	84
Minority	27	13	27	16
Tenure Status				
Tenured	135	65	114	65
Non-Tenured	71	35	61	35
Discipline				
STEM based	97	47	77	44
Arts	11	5	10	6
Other	19	9	22	12
Humanities based	31	15	16	12
Social Sciences	50	24	4	26
Highest education level				
Bachelor's degree	1	1	1	1
Master's degree	28	13	28	16
PhD	179	86	147	83

Table 5.

Individual Beliefs of Respondents by Desire to Conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (Percent responding agree and strongly agree

	SoTL		Scholarship of Extension/ Professional Practice	
Variable	*n*	%	*n*	%
I understand the distinctions between scholarly teaching and the scholarship of teaching and learning as defined by Iowa State University	211	76		
I am satisfied with how scholarship is evaluated in my department	198	62	169	63
The criteria for tenure in my academic department are broad enough to include all of the various forms of scholarship in which faculty are engaged	195	66	167	67
The majority of my departmental colleagues value the scholarship of extension/professional practice (scholarship that applies the knowledge and skill of an academic discipline to practical problems	196	54	168	61
In my academic department, various forms of scholarship receive some weight in the awarding of tenure	196	71	168	74
The majority of my departmental colleagues value the Scholarship of Teaching and Learning (scholarship that contributes to the improvement of college teaching /student learning	199	56	167	63
In my academic department, all forms of scholarship receive equivalent weight in the promotion of faculty members	196	24	166	25
Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice	194	71	0	0
The majority of my departmental colleagues value research that leads to new disciplinary knowledge	202	95	174	97
The criteria for promotion in academic rank in my academic department are broad enough to include the full range of scholarship conducted by faculty	198	62	170	60
I believe I am having or had the opportunity to influence the scholarly culture of my department during my initial entry into the department at ISU	199	64	171	63
I am gaining or have gained an understanding of what scholarship is valued from observing my senior colleagues in the department	202	81	171	82
I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU	186	33	159	35

Gender

When comparing gender among all faculty respondents, 56% of all faculty respondents were male (n=197) and 44% were female (n=152). Respondents with the desire to conduct the scholarship of teaching and learning in the future were just slightly more likely to be male (n=112) than female (n=100), representing 53% and 47%, respectively. Interestingly, when comparing the gender percentage profile of faculty desiring to conduct the scholarship of professional practice in the future, the gender percentage profile was the same.

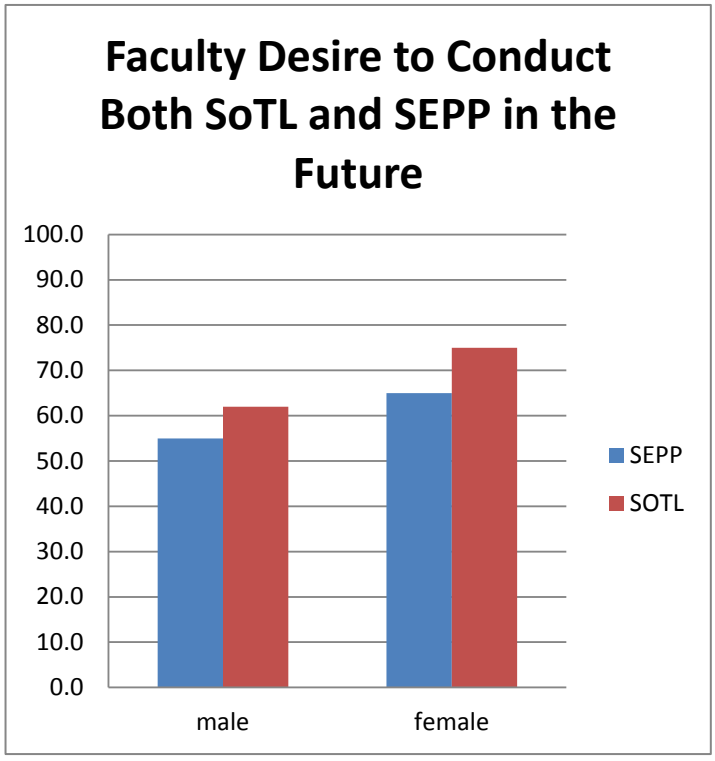

Figure 7. Faculty desire to conduct both scholarly domains by gender

Tenure

Respondents from the entire faculty were predominantly tenured (n=239). Those non-tenured (n=101) comprised 30% of the respondents, while 70% of the faculty were tenured. The gap closed slightly for the dataset of faculty desire to conduct the scholarship of teaching and

learning in the future, tenured faculty comprised 66% of the respondents (n=135) and non-tenured faculty comprised 34% of the respondents (n=71).

Remarkably, the composition percentage was again the same in those desiring to conduct the scholarship of professional practice in the future, as 66% (n=114) of the faculty were tenured and 34% of the faculty were non-tenured (61).

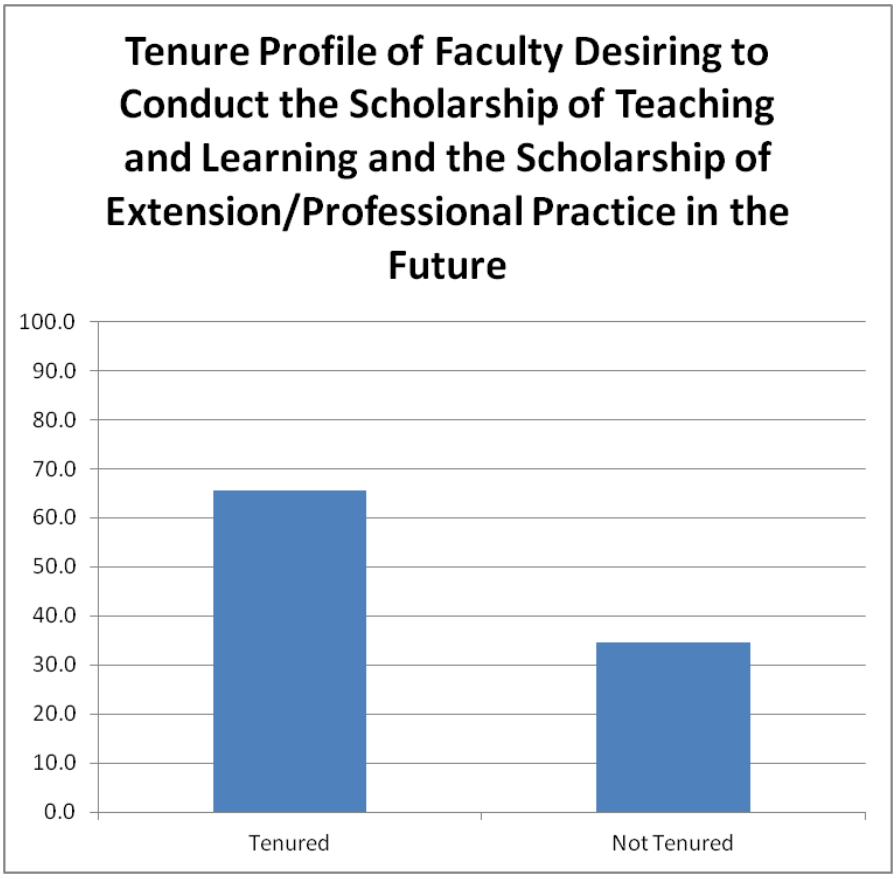

Figure 8. Tenure profile of faculty desire to conduct both scholarly domains

Race/Ethnicity

A significant number of respondents were White, Non-Hispanic (n=285, 88%). The remaining race/ethnicities included Asian or Pacific Islander (n=14, 4%), Hispanic (n=8, 2.5%),

Other (n=9, 3%), Black (n=6, 2%), and American Indian or Alaskan Native (n=1, .3%). The respondents' race/ethnicity was eventually recoded into White, Non-Hispanic and Non-White, generating percentages of 88% and 12% respectively. Remarkably, the demographics regarding race/ethnicity barely changed for the respondents desiring to conduct the scholarship of teaching and learning in the future, generating percentages of 87% and 13% respectively. The percentages shifted slightly when evaluating the race/ethnicity percentage profile for those faculty desiring to conduct the scholarship of professional practice in the future, generating 84% and 16% respectively.

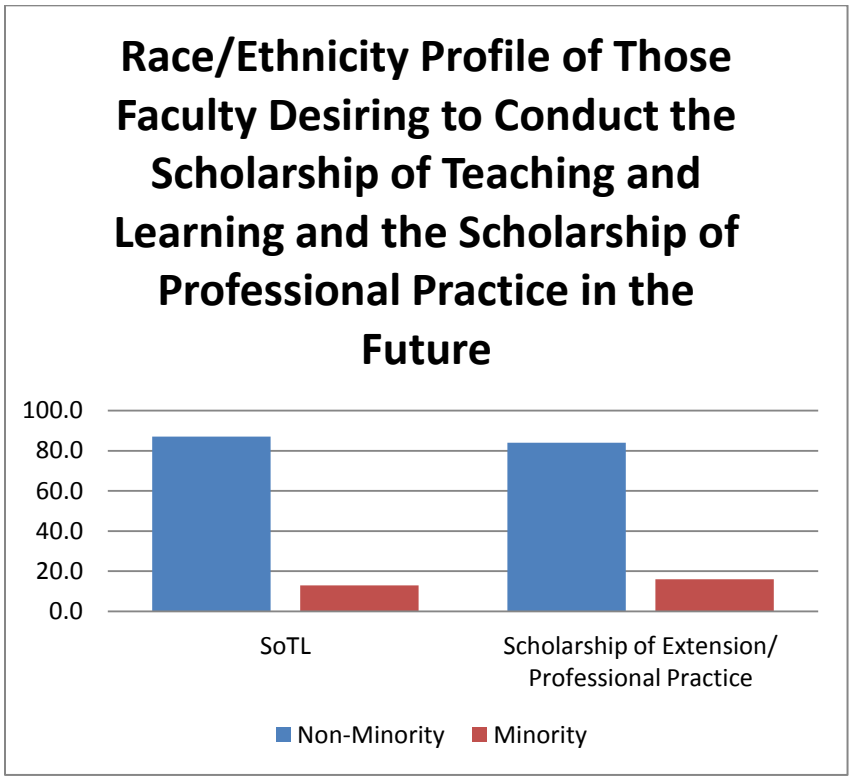

Figure 9. Race/Ethnicity profile of faculty desire to conduct both scholarly domains

Academic Rank

Two fifths of respondents were professors (n=140). About one fifth of the respondents were associate professors (n=100). Almost one fifth of respondents were assistant professors

(n=58). Finally, lecturers comprised slightly more than one tenth (n=44) and clinicians a mere one percent (n=4). In comparison with the demographics of faculty wanting to conduct the scholarship of teaching and learning (SoTL) in the future, only approximately one third of the faculty wanting to conduct SoTL were professors (n=72). There was an increase in the percentage of associate professors wanting to conduct SoTL, as almost one third were doing so (n=66). Assistant professors desiring to conduct SoTL compared similarly as almost one fifth were doing so (n=39), and Lecturers held similar as well at fourteen percent (n=30). Delimiting the dataset to just faculty desiring to conduct the scholarship of professional practice in the future revealed that the percentage breakdown of faculty rank was almost exactly the same.

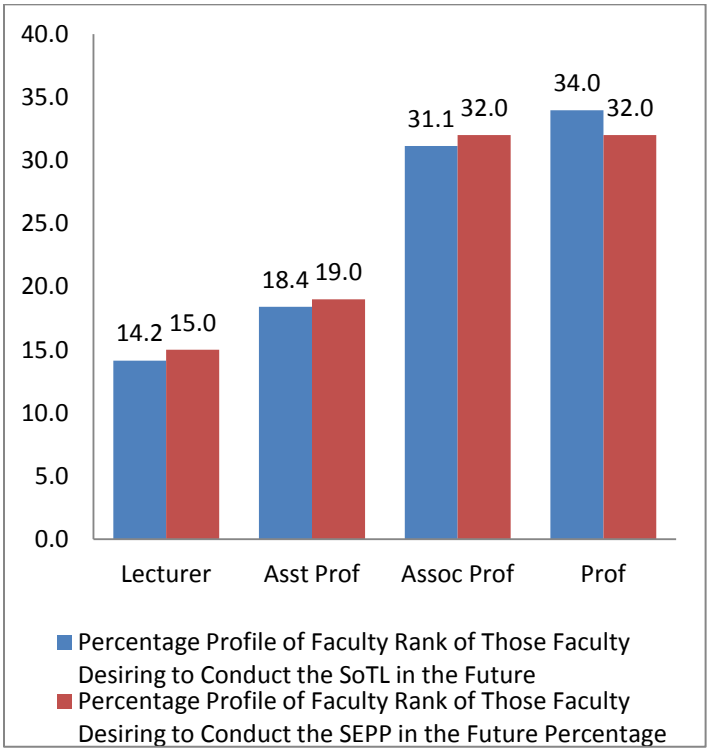

Figure 10. Faculty rank of those faculty desire to conduct both scholarly domains

Primary Academic Discipline

Faculty from the Science, Technology, Engineering and Mathematics (STEM) disciplines comprised one half of the respondents (n=170). The social sciences were represented by slightly

greater than two tenths of the respondents (n=77). The humanities and other each comprised approximately one tenth of the response (n=40) and (n=38), respectively. The arts comprised the remaining responses at almost five percent (n=15). There was a slight shift in comparing the primary academic discipline of those faculty desiring to conduct the Scholarship of Teaching and Learning. Faculty from the Science, Technology, Engineering and Mathematics (STEM) disciplines comprised slightly less than one half of the respondents. The social sciences were represented by almost one fourth of the respondents. The humanities discipline comprised fifteen percent of the respondents. Other comprised almost one tenth of the response. The arts comprised the remaining responses at five percent.

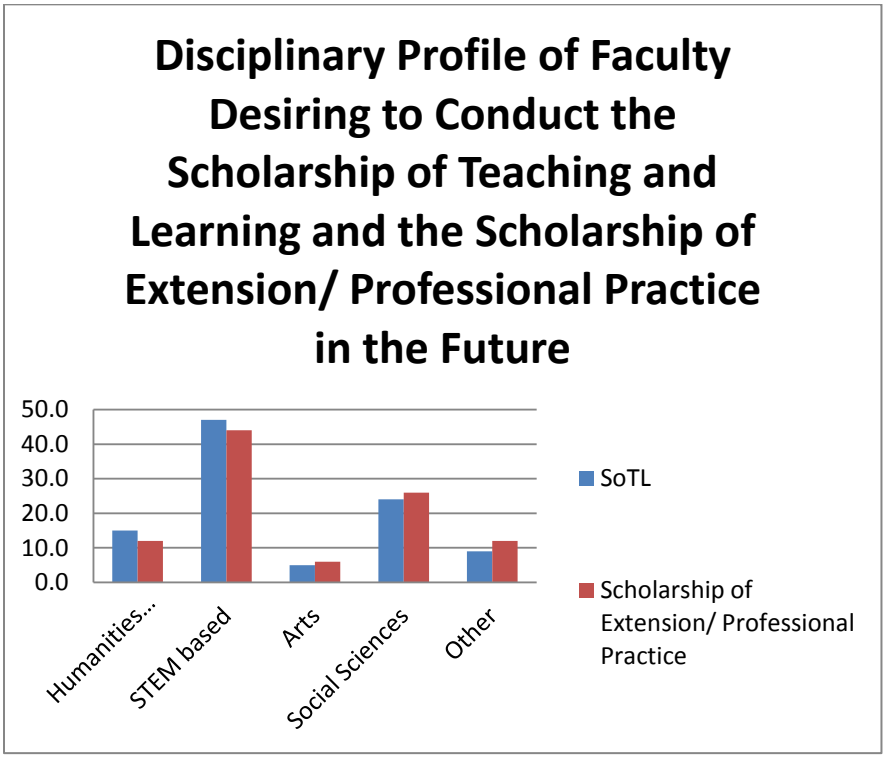

Figure 11. Disciplinary profile of faculty desire to conduct both scholarly ranks

Professional Age

Participants' professional age varied significantly. Respondents had a minimum of one year since completion of their PhD and a maximum of 48 years. The mean years since

completion of their PhD was 20 years and the mode professional age was 6 years. The mean years since completion of their PhD for faculty desiring to conduct the scholarship of teaching and learning was 19 and the mode professional age was greater than the overall sample at 12 years. The mean professional age for faculty desiring to conduct the scholarship of extension/professional practice was also19 years and the mode professional age was slightly greater than those faculty desiring to conduct SoTL at 14 years.

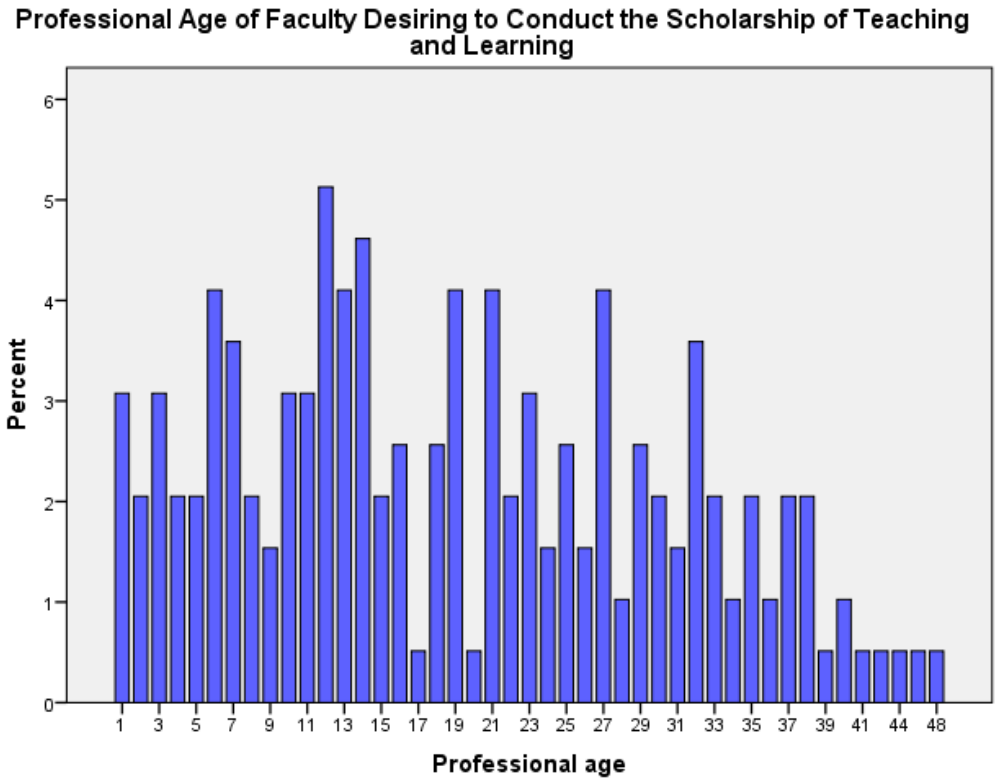

Figure 12. Professional age profile of faculty desiring to conduct the Scholarship of Teaching and Learning

Figure 13. Professional age profile of faculty desiring to conduct the Scholarship of Teaching and Learning

Research Question 2: How does tenure status compare by gender and are there significant differences in tenure status by males and females?

A greater number of male respondents (80%) in the full dataset were tenured as compared to female respondents (58%). The non-tenured status ratio was 2:1 for females (42%) as compared to males (20%). Refer to Figure 14 to see the depiction.

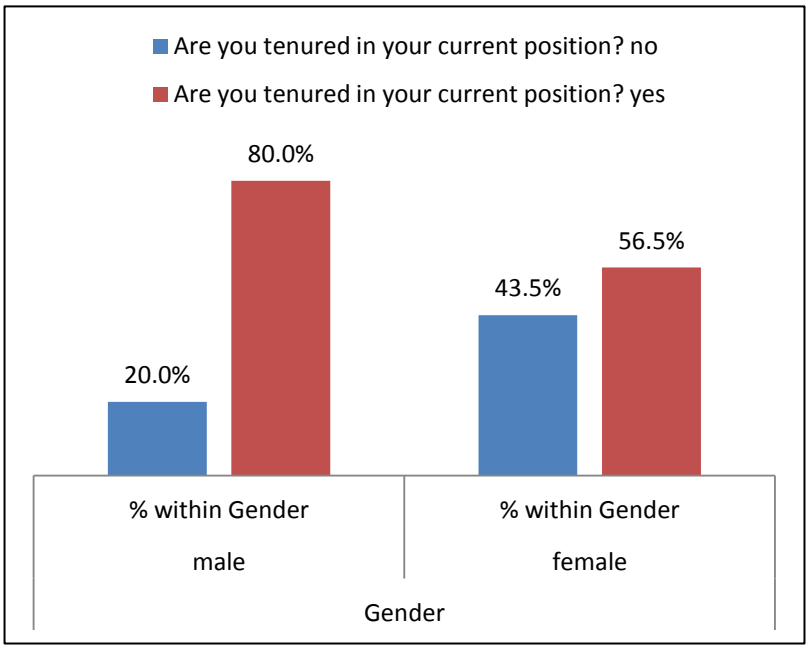

Figure 14. Gender by tenure status

_T_ Test

An independent samples *t* test was conducted to compare the mean scores of two groups (gender) on tenure status. The grouping variable, gender, was 0 = male and 1 = females. Table 6 summarizes the means of the independent samples *t* test of tenure status, respectively, by gender.

The mean number of tenure status of females and males was .56 and .80, respectively, with a difference of .24, where not tenured =0 and tenured =1. The means were statistically significant between gender groups ($t = 4.84$, $df = 340$, $p = .00$) at the $p < .01$ level.

Table 6.

Means, Standard Deviations, and T test Result for Tenure Status

	Female		Male					Confidence interval	
	M	*SD*	*M*	*SD*	*t*	*df*	*p*	Lower	Upper
Tenure Status	.56	0.50	.80	0.40	4.70	274	.00*	.14	.33

*$p < .01$.

Research Question 3: How does Rank compare by Gender and are there significant gender differences among rank?

Also in the full dataset, professors were more than three times likely to be male than female. Females were slightly more likely to be associate and assistant professors. Finally, females were more than twice as likely to be lecturers as males, as illustrated in figure 15.

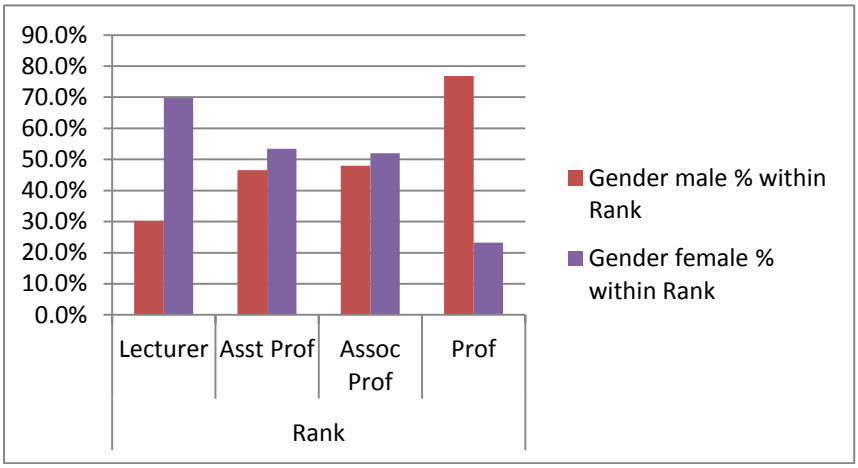

Figure 15. Faculty rank by gender

One-way Analysis of Variance

A one-way between subjects ANOVA was conducted to compare the effect of gender on faculty rank. The mean gender across all ranks was .44, where male=0 and female=1. The mean gender for each rank was Lecturer = .70, Assistant Professor = .53, Associate Professor = .52, and Professor = .23. The means and standard deviations for gender among the four most common faculty ranks are shown in Table 7.

Table 7.

Descriptive Statistics of Gender among Faculty Rank

Independent Variables	N	Mean	Std. Deviation
Lecturer	44	.70	.46
Assistant Professor	58	.53	.50
Associate Professor	100	.52	.50
Professor	140	.23	.42

The null hypothesis to address this ANOVA research question was as follows:

H_0: Gender is equally dispersed among four faculty ranks (Lecturer, Assistant, Associate and Professor) or $\mu_1 = \mu_2$, where μ_1, μ_2 are the mean gender among the four faculty ranks.

The alternative hypothesis was: H_1: The mean gender of at least one faculty rank is significantly different.

There was a statistically significant difference at the $p<.01$ level in gender for the four faculty ranks [$F(5, 343) = 11.04$, $p = 0.00$]. The Levene test for the equality of variances among the levels of the independent variable (faculty rank) found that the variances were significantly different ($F = 4.622$, $p < .01$), suggesting that an alternative post hoc test should be used. Post hoc comparisons using the Games-Howell test indicated that the mean gender score for Lecturer (M = 0.70, SD = 0.46) was significantly different than the mean gender score for Professor (M = 0.23, SD = 0.43), with a difference of 0.47. However, the mean gender score for Lecturer did not significantly differ from the mean gender score for Assistant Professor (M = 0.53, SD = 0.50) or Associate Professor (M = 0.52, SD = 0.50.) Post hoc comparisons using the Games-Howell test also indicated that the mean gender score for Assistant Professor (M = 0.53, SD = 0.50) and

Associate Professor (M = 0.52, SD = 0.50) were significantly different than the mean gender score for Professor (M = 0.23, SD = 0.43). There was no significantly different mean gender score among Assistant Professors, Lecturers, and Associate Professors. Taken together, these results suggest that Professors are significantly more likely to be males at Iowa State University. The range for this section was from 0 to 1, with 0 = male and 1 = female.

Research Question 4: Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship between gender?

To respond to research question 4, factors needed to be developed from the Scholarly Outputs Scale and the Departmental Statements Scale.

Exploratory Factor Analysis

In preparation for the remaining research questions 4, 5, and 6, an exploratory factor analysis with varimax rotation was conducted to determine which constructs from the original Scholarly Output Scales still held and whether any new constructs could be created from the new items that were added to the questionnaire. An extensive descriptive analysis was performed prior to the exploratory factor analysis to investigate the distribution of each variable before conducting the factor analysis. The results of the factor analysis provided the opportunity to determine if the constructs that were originally proposed by Braxton et al. (2002) held, or if different constructs emerged.

Initially, the factorability of the 18 alternative scholarship items was examined. Several well-recognized criteria for factorability were used. First, 17 of the 18 items correlated at least .3 with at least one other item, suggesting reasonable factorability. Next, the Kaiser-Meyer-Olkin measure of sampling adequacy was .90, above the value of .6 required for a good factor analysis according to Tabachnick and Fidell (2007). Values below .5 imply that factor analysis may not

be appropriate. Bartlett's test of sphericity was significant (χ^2 (153) = 3539, $p < .001$). Finally, the communalities were all above .3, confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was conducted with all 18 scholarly output items.

Principal components factor analysis of the 18 items, using varimax rotation was conducted, with the four factors explaining 68% of the variance. The factor loading matrix is presented in Table 8. The initial eigenvalues showed that the first factor explained 45% of the variance, the second factor 10% of the variance, a third factor 7% of the variance, and the fourth factor explained 6% of the variance, with an Eigenvalue just over 1. Constructs with alpha reliability scores above .70 (Litwin, 1995) were used to create the models for the present study. After all dimension reduction techniques had been employed, a total of 2 constructs emerged from the analysis. See Table 8 for a complete description of the constructs and the items that made up each of the constructs, along with factor loadings and alpha reliabilities.

The two scholarship factors

From the exploratory factor analysis, two scholarly output constructs emerged, all answered on a scale of the number of scholarly outputs respondents had generated in the past three years, ranging from 1 (*none*) to 5 (*11 or more*): (a) scholarship of teaching and learning ($\alpha = .928$) and (b) scholarship of extension/professional practice ($\alpha = .767$).

Table 8.

Exploratory Factor Loadings and Reliability Analysis

Variables (alpha coefficients in parentheses)	Factor loading
Scholarly Factors (Dependent Constructs)	
Scholarship of Teaching and Learning (α = .928)	
Developed peer reviewable but unpublished methods to assess student learning of course content	.842
Created a peer reviewable but unpublished approach or strategy to help students to think critically about course concepts	.805
Experimented with new teaching methods or activities and documented these in a peer reviewable but unpublished manner	.831
Developed peer reviewable but unpublished examples, materials, class exercises or assignments that help students to learn difficult course concepts	.627
Created a peer reviewable but unpublished approach or strategy for dealing with classroom management problems faced in teaching a particular type of course	.768
Made a presentation to colleagues about new instructional techniques	.726
A publication on an approach or strategy to help students to think critically about course concepts	.625
A publication reporting the development of methods to assess student learning of course content	.618
A publication on an approach or strategy for dealing with classroom-management problems faced in teaching a particular type of course	.619
A publication on a new instructional method or approach developed by you	.545
Scholarship of Extension/Professional Practice (α = .767)	
A critical book review published in the popular press	.791
An article or a book addressing a disciplinary/interdisciplinary topic published in popular press	.649
Provided leadership in a professional organization	.780
Served on a governmental or non-profit agency board due to your professional expertise	.753
A journal article reporting findings of research designed to solve a practical problem	.670
Conducted peer reviewable seminars for lay persons on current disciplinary topics	.492
Developed an innovative technology or process that was patented	.815

Ten items loaded onto the first construct. It was clear from Table 8 that these ten items related to the scholarship of teaching and learning. The items that loaded onto this construct include “Developed peer reviewable but unpublished methods to assess student learning of course content,” “Created a peer reviewable but unpublished approach or strategy to help students to think critically about course concepts,” “Experimented with new teaching methods

or activities and documented these in a peer reviewable but unpublished manner," Developed peer reviewable but unpublished examples, materials, class exercises or assignments that help students to learn difficult course concepts," "Created a peer reviewable but unpublished approach or strategy for dealing with classroom management problems faced in teaching a particular type of course," "Made a presentation to colleagues about new instructional techniques," "A publication on an approach or strategy to help students to think critically about course concepts," "A publication reporting the development of methods to assess student learning of course content," "A publication on an approach or strategy for dealing with classroom-management problems faced in teaching a particular type of course," and "A publication on a new instructional method or approach developed by you." The resulting Cronbach's Alpha was .928. This construct was labeled, "Scholarship of Teaching and Learning (SoTL)."

The two items that loaded onto the second construct related to the scholarship of engagement or what Iowa State University refers to as the scholarship of extension/professional practice. The two items included "A critical book review published in the popular press" and "An article or a book addressing a disciplinary/interdisciplinary topic published in the popular press."

While the remaining items loaded onto two other factors, these items related to the scholarship of extension/professional practice, and included "Served on a governmental or non-profit agency board due to your professional expertise," "Provided leadership in a professional organization," "A journal article reporting findings of research designed to solve a practical problem," "Conducted peer reviewable seminars for lay persons on current disciplinary topics," "Developed an innovative technology or process that was patented," and "Engaged in clinical

practice." Since there were only four faculty clinicians in the sample, and clinicians were thus removed from the sample, the decision was made to drop the latter item. Since these items related to the scholarship of extension/professional practice, and did not load together in a manner that held with Braxton et al.'s (2002) prior work (separate constructs for published and unpublished scholarship of extension/professional practice), all seven items were combined as a possible construct in a reliability analysis. Since the resulting Cronbach's alpha was sufficiently strong at .767, all of these items were combined into one factor labeled, "Scholarship of Extension/Professional Practice."

The factor labels proposed by Braxton et al. (2002) were similar to the findings in this factor analysis, except that Braxton et al. (2002) had two factors for each of the above domains of scholarship: published and unpublished. This study did not replicate those findings, but rather, found that the published and unpublished items formed one factor each. No substantial increases in alpha for either of the constructs could have been achieved by eliminating more items.

Composite scores were created for each of the two constructs, based on the mean of the items which had their primary loadings on each construct. Descriptive statistics are presented in Table 9. The skewness and kurtosis were well within a tolerable range for assuming a normal distribution and examination of the histograms suggested that the distributions looked approximately normal.

Table 9.

Descriptive statistics for the two Scholarly Outputs Scale (SOS) constructs

	No. of items	*M* (*SD*)	Skewness	Kurtosis	Alpha
SoTL	10	1.39 (.52)	2.23	5.75	.93
Scholarship of Extension/ Professional Practice	7	1.61 (.58)	1.63	3.64	.77

Independent Samples T Tests

Prior to addressing research question four, clinicians and lecturers were delimited (excluded) from the study. Only four clinicians responded to the study. Research question four explores the differences between gender in the conduct of and desire to conduct these alternative scholarly domains, and lecturers do not have the same scholarly expectations as tenured and tenure-track faculty.

Independent samples *t* tests were then conducted to compare the mean scores of two groups (gender) on the conduct of and desire to conduct Boyer's alternative forms of scholarship. The grouping variable, gender, was 0 = males and 1 = females. Table 10 summarizes the means of the independent samples *t* test of the conduct of and desire to conduct Boyer's alternative forms of scholarship by gender.

The mean conduct of the scholarship of teaching and learning for females and males was .73 and .65, respectively, with a difference of .08, where conduct of scholarship of teaching and learning was a construct measure recoded into 0 = does not conduct and 1 = conducts. The mean conduct of the scholarship of extension/professional practice for females and males was .82 and .94, respectively, where conduct of scholarship of extension/professional practice was a

Table 10.

Means, Standard Deviations, and T Test Results for Conduct of and Desire to Conduct SoTL and the Scholarship of Extension/Professional Practice

	Female		Male					Confidence interval	
	M	*SD*	*M*	*SD*	*t*	*df*	*p*	Lower	Upper
Conduct of SoTL	0.73	0.45	0.65	0.48	1.37	279	.171	-.03	.19
Conduct of Scholarship of Extension/Prof Practice	0.82	0.38	0.94	0.24	-3.00	279	.003	-.19	-.04
Desire to Conduct SoTL	0.66	0.48	0.61	0.49	0.86	210.16	.39	-.07	.17
Desire to Conduct Scholarship of Extension/Prof Practice	0.56	0.50	0.54	0.50	0.32	205.85	.75	-.11	.15

*$p < .01$.

construct measure recoded into 0 = does not conduct and 1 = conducts. The mean conduct of the scholarship of extension/professional practice was statistically significant between gender groups (t = -3.00, df = 279, p = .003) at the $p < .01$ level, while the mean conduct of the scholarship of teaching and learning was not statistically significant between gender groups. The mean desires to conduct both the scholarship of teaching and learning (females = 0.66, males = 0.61) and scholarship of extension/professional practice (females = 0.56, males = 0.54) were not statistically significant between gender groups.

Research Question 5: Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks?

One-Way Analysis of Variance

Similar to research question four, clinicians and lecturers were delimited (excluded) from the dataset. Research question five explores the differences among faculty rank in the conduct of and desire to conduct these alternative scholarly domains, and lecturers do not have the same scholarly expectations as tenured and tenure-track faculty.

The first aspect of this research question explores the degree to which the conduct of the two alternative forms of scholarship differed among Assistant Professors, Associate Professors, and Professors.

Conduct of the scholarship of teaching and learning

The minimum and maximum range for the conduct of the scholarship of teaching and learning (SoTL) was 0.000 – 1.000. The mean for the conduct of the scholarship of teaching and learning across all ranks was .67. The mean conduct of SoTL for each rank was Assistant Professor = .75, Associate Professor = .76, and Professor = .56. The means and standard deviations for the conduct of SoTL among the three faculty ranks are shown in Table 11.

Table 11.

Descriptive Statistics of the Conduct of the Scholarship of Teaching and Learning among Faculty Rank

Independent Variables	N	Mean	Std. Deviation
Assistant Professor	53	.75	.43
Associate Professor	89	.76	.43
Professor	117	.56	.50
Total	259	.67	.47

The null hypothesis to address the first ANOVA research question was as follows:

H_0: All three faculty ranks (Assistant, Associate and Professor) have equal levels of the conduct of the scholarship of teaching and learning on average or $\mu_1 = \mu_2 = \mu_3$, where μ_1, μ_2, μ_3 are the mean conduct of the scholarship of teaching and learning among the three faculty ranks.

The alternative hypothesis was: H_1: The mean conduct of the scholarship of teaching and learning of at least one faculty rank is significantly different.

There was a statistically significant difference at the $p<.01$ level of significance in the conduct of the scholarship of teaching and learning for the three faculty ranks. See Table 12.

Table 12.

One-Way ANOVA of Dependent Variable (Conducts Scholarship of Teaching and Learning) by Faculty Rank (N=259)

Dependent Variable	Groups	SS	Df	MS	F	P
Conducts SoTL	Between	2.48	2	1.24	5.81	.003
	Within	54.63	256	.21		
	Total	57.10	258			

$p<.01$

Post-hoc comparison using Games-Howell was run since equal variances could not be assumed and appears in Table 13.

Table 13.

Post Hoc Test – Comparisons of Conducts Scholarship of Teaching and Learning by Rank

Dependent Variable		(I) Faculty Rank	(J) Faculty Rank	Mean Difference	Std. Error	Sig.
Conducts SoTL	Games-Howell	Asst Prof	Assoc Prof	-.00933	.075	.991
			Prof	.19061*	.075	.034
		Assoc Prof	Asst Prof	.00933	.075	.991
			Prof	.19994*	.065	.006
		Prof	Asst Prof	-.19061*	.075	.034
			Assoc Prof	-.19994*	.065	.006

Results indicated that there was a significant difference between the conduct of the scholarship of teaching and learning and faculty rank: Assistant Professor, Associate Professor and Professor. The conduct of SoTL decreased from the faculty ranks of Assistant and Associate Professor to Professor: Assistant Professor (M = .75), Associate Professor (M = .76) and Professor (M = .56). The post hoc tests suggested that among the groups, there are statistically significant differences in the conduct of the scholarship of teaching and learning between Assistant Professors and Professors, as well as Associate Professors and Professors.

Conduct of the Scholarship of Extension/Professional Practice

The minimum and maximum range for the conduct of the scholarship of extension/professional practice was 0.000 – 1.000. The mean for the conduct of the scholarship of extension/professional practice across all ranks was .91. The mean conduct of the scholarship of extension/professional practice for each rank was Assistant Professor = .81, Associate Professor = .91, and Professor = .95. The means and standard deviations for the scholarship of extension/professional practice among the three faculty ranks are shown in Table 14.

Table 14.

Descriptive Statistics of the Conduct of the Scholarship of Extension/Professional Practice among Faculty Rank

Independent Variables	N	Mean	Standard Deviation
Assistant Professor	53	.81	.40
Associate Professor	89	.91	.29
Professor	117	.95	.22
Total	259	.91	.29

The null hypothesis to address this ANOVA research question was as follows:

H_0: All three faculty ranks (Assistant, Associate and Professor) have equal levels of the conduct of the scholarship of extension/professional practice on average or $\mu_1 = \mu_2 = \mu_3$, where μ_1, μ_2, μ_3 are the mean conduct of the scholarship of extension/professional practice among the three faculty ranks.

The alternative hypothesis was: H_1: The mean conduct of the scholarship of extension/professional practice of at least one faculty rank is significantly different.

There was a statistically significant difference at the $p<.01$ level of significance in the conduct of the scholarship of extension/professional practice for the three faculty ranks. See Table 15.

Table 15.

One-Way ANOVA of Dependent Variable (Scholarship of Professional Practice) by Faculty Rank (N=259)

Dependent Variable	Groups	SS	Df	MS	F	P
Extension/Professional Practice	Between	.70	2	.35	4.19	.016
	Within	21.09	256	.08		
	Total	21.78	258			

p<.05

Post-hoc comparison using Games-Howell was run since equal variances could not be assumed and appears in Table 16.

Table 16.

Post Hoc Test – Comparisons of Scholarship of Professional Practice by Rank

Dependent Variable		(I) Faculty Rank	(J) Faculty Rank	Mean Difference	Std. Error	Sig.
Scholarship of Professional Practice	Games-Howell	Asst Prof	Assoc Prof	-.09879	.062	.257
			Prof	-.13740	.058	.053
		Assoc Prof	Asst Prof	-.09879	.062	.257
			Prof	-.03861	.037	.546
		Prof	Asst Prof	.13740	.058	.053
			Assoc Prof	.03861	.037	.546

Initial results indicated that there was a significant difference between the conduct of the scholarship of professional practice and faculty rank: Assistant Professor, Associate Professor and Professor. The conduct of the scholarship of professional practice increased across the three faculty ranks, Assistant Professor (M = .81), Associate Professor (M = .91) and Professor (M = .95). However, the post hoc tests suggested that among the groups, there were no statistically significant differences in the conduct of the scholarship of professional practice among Assistant Professors, Associate Professors, and Professors.

Desire to conduct the scholarship of teaching and learning

The minimum and maximum range for the desire to conduct the scholarship of teaching and learning was 0.000 – 1.0 for all three groups. The mean for the desire to conduct the scholarship of teaching and learning across all ranks was .63. The mean desire to conduct the scholarship of teaching and learning for each rank was Assistant Professor = .70, Associate Professor = .71, and Professor = .54. The means and standard deviations for the desire to conduct the scholarship of teaching and learning among the three faculty ranks are shown in Table 17.

Table 17.

Descriptive Statistics of the desire to conduct the scholarship of teaching and learning among Faculty Rank

Independent Variables	N	Mean	Std. Deviation
Assistant Professor	53	.70	.46
Associate Professor	89	.71	.46
Professor	117	.54	.50
Total	259	.63	.48

The null hypothesis to address the first ANOVA research question was as follows:

H_0: All three faculty ranks (Assistant, Associate and Professor) have equal levels of the desire to conduct the scholarship of teaching and learning on average or $\mu_1 = \mu_2 = \mu_3$, where μ_1, μ_2, μ_3 are the mean desire to conduct the scholarship of teaching and learning among the three faculty ranks.

The alternative hypothesis was: H_1: The mean desire to conduct the scholarship of teaching and learning of at least one faculty rank is significantly different. There was a

statistically significant difference at the p<.05 level of the desire to conduct the scholarship of teaching and learning for the three faculty ranks. See Table 18.

Table 18.

One-Way ANOVA of Dependent Variable (Desire to conduct the scholarship of teaching and learning) by Faculty Rank (N=259)

Dependent Variable	Groups	SS	Df	MS	F	P
Desire to conduct the scholarship of teaching and learning	Between	1.77	2	.88	3.85	.022
	Within	58.65	256	.23		
	Total	60.42	258			

p<.05

Post-hoc comparison using Games-Howell was run since equal variances could not be assumed and appears in Table 19.

Table 19.

Post Hoc Test – Comparisons of Desire to conduct the scholarship of teaching and learning) by Rank

Desire to conduct the scholarship of teaching and learning	Games-Howell	Asst Prof	Assoc Prof	-.010	.080	.992
			Prof	.160	.079	.110
		Assoc Prof	Asst Prof	.010	.080	.992
			Prof	.169*	.067	.033
		Prof	Asst Prof	-.160	.079	.110
			Assoc Prof	-.169*	.067	.033

Results indicated that there was a significant difference between the desire to conduct the scholarship of teaching and learning and faculty rank: Assistant Professor, Associate Professor and Professor. The desire to conduct SoTL decreased from the faculty ranks of Assistant and Associate Professor to Professor: Assistant Professor (M = .70), Associate Professor (M = .71) and Professor (M = .54). The post hoc test suggested that among the ranks, there is a statistically

significant difference in the desire to conduct the scholarship of teaching and learning between Associate Professors and Professors only.

Desire to conduct the scholarship of extension/professional practice

The minimum and maximum ranges for the desire to conduct the scholarship of extension/professional practice were 0.000 – 1.000. The mean for the desire to conduct the scholarship of extension/professional practice across all ranks was .55. The mean desire to conduct the scholarship of extension/professional practice for each rank was Assistant Professor = .64, Associate Professor = .61, and Professor = .46. The means and standard deviations for the desire to conduct the scholarship of extension/professional practice among the three faculty ranks are shown in Table 20.

Table 20.

Descriptive Statistics of the Desire to conduct the scholarship of extension/professional practice among Faculty Rank

Independent Variables	N	Mean	Std. Deviation
Assistant Professor	53	.64	.48
Associate Professor	89	.61	.49
Professor	117	.46	.50
Total	259	.55	.50

The null hypothesis to address the final ANOVA research question was as follows:

H_0: All three faculty ranks (Assistant, Associate and Professor) have equal levels of the desire to conduct the scholarship of extension/professional practice on average or $\mu_1 = \mu_2 = \mu_3$, where μ_1, μ_2, μ_3 are the mean desire to conduct the scholarship of extension/professional practice among the three faculty ranks.

The alternative hypothesis was: H_1: The mean conduct of the desire to conduct the scholarship of extension/professional practice of at least one faculty rank is significantly different.

There was a statistically significant difference at the $p<.05$ level of significance in the desire to conduct the scholarship of extension/professional practice for the three faculty ranks. See Table 21.

Table 21.

One-Way ANOVA of Dependent Variable (Desire to conduct the scholarship of extension/professional practice) by Faculty Rank (N=270)

Dependent Variable	Groups	SS	Df	MS	F	P
Desire to conduct the scholarship of extension/professional practice	Between	1.65	2	.82	3.37	.036
	Within	62.50	256	.24		
	Total	64.15	258			

$p<.01$

Post-hoc comparison using Games-Howell was run since equal variances could not be assumed and appears in Table 22.

Table 22.

Post Hoc Test – Comparisons of Desire to conduct the scholarship of extension/professional practice by Rank

Dependent Variable		(I) Faculty Rank	(J) Faculty Rank	Mean Difference	Std. Error	Sig.
Desire to conduct the scholarship of extension/professional practice	Games-Howell	Asst Prof	Assoc Prof	.03477	.084	.911
			Prof	.17997	.081	.072
		Assoc Prof	Asst Prof	-.03477	.084	.911
			Prof	.14520	.070	.096
		Prof	Asst Prof	-.17997	.081	.072
			Assoc Prof	-.14520	.070	.096

Initial results indicated that there was also a significant difference between the desire to conduct the scholarship of professional practice and faculty rank: Assistant Professor, Associate Professor and Professor. The desire to conduct the scholarship of professional practice increased, then decreased, across the three faculty ranks, Assistant Professor (M = .64), Associate Professor (M = .67) and Professor (M = .46). However, the post hoc tests suggested that among the groups, there were no statistically significant differences in the desire to conduct of the scholarship of professional practice among Assistant Professors, Associate Professors, and Professors.

Research Question 6: Does departmental socialization serve as a predictor of the desire to conduct the scholarship of teaching and learning and the scholarship of professional practice?

Exploratory Factor Analysis

To respond to research question six, the delimited dataset of Assistant, Associate and Professors only was used. factors needed to be explored from the Departmental Statements Scale. Just one new construct emerged from the items that were specifically chosen in an attempt to measure and operationalize the concept of departmental socialization using Bandura's Social Learning Theory. As summarized in Chapter 1, social learning theory posits that when faced with uncertainty about how to become socialized to a culture, individuals will model the behaviors of referent others (Bandura, 1986). In other words, human behavior is learned through interaction and observation of others in a social context (1977, 1986). It is through the observation of other people's actions and consequences (in the context of this study, scholarship and its rewards), that individuals acquire rules and develop their own hypotheses about which responses are most appropriate (Bandura, 1977).

The factorability of the 10 departmental socialization items was first examined. Criteria for factorability were again used. While all of the items correlated at least .3 with at least one other item, the communalities were not all above .3 (see Table 23), suggesting that two items ("Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice" and "I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU") did not have enough shared common variance with other items. The Kaiser-Meyer-Olkin measure of sampling adequacy was .88, above the recommended value of .6, and Bartlett's test of sphericity was significant (χ^2 (28) = 1126.88, $p < .00$). Given these overall indicators, factor analysis was conducted with 8 of the 10 items.

A principal-components factor analysis of the 8 items, using varimax rotation was conducted, with two factors explaining 70% of the variance. All items had primary loadings over .5. The factor loading matrix is presented in Table 24.

Departmental socialization

Seven items loaded onto Factor 1. It was clear from Table 25 that most of these seven items relate to observations made about departmental rewards for alternative forms of scholarship. The items that loaded onto this factor include "The criteria for promotion in academic rank in my academic department are broad enough to include the full range of scholarship conducted by faculty," "The majority of my departmental colleagues value the scholarship of extension/professional practice (scholarship that applies the knowledge and skill of an academic discipline to practical problems," "The majority of my departmental colleagues value the Scholarship of Teaching and Learning (scholarship that contributes to the improvement

Table 23.

Principal Components Analysis Communitalities

Variable	Initial	Extraction
I am satisfied with how scholarship is evaluated in my department	1.000	.620
The criteria for tenure in my academic department are broad enough to include all of the various forms of scholarship in which faculty are engaged	1.000	.701
The majority of my departmental colleagues value the scholarship of extension/professional practice (scholarship that applies the knowledge and skill of an academic discipline to practical problems	1.000	.698
In my academic department, various forms of scholarship receive some weight in the awarding of tenure	1.000	.631
The majority of my departmental colleagues value the Scholarship of Teaching and Learning (scholarship that contributes to the improvement of college teaching /student learning	1.000	.676
In my academic department, all forms of scholarship receive equivalent weight in the promotion of faculty members	1.000	.496
Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice	1.000	.290
The criteria for promotion in academic rank in my academic department are broad enough to include the full range of scholarship conducted by faculty	1.000	.762
I am gaining or have gained an understanding of what scholarship is valued from observing my senior colleagues in the department	1.000	.892
I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU	1.000	.241

Table 24.

Exploratory Factor Loadings and Reliability Analysis

Variables (alpha coefficients in parentheses)	*Factor loading*
Departmental Statements	
Perceived Departmental Reward (α = .908)	
The criteria for promotion in academic rank in my academic department are broad enough to include the full range of scholarship conducted by faculty	.849
The majority of my departmental colleagues value the scholarship of extension/professional practice (scholarship that applies the knowledge and skill of an academic discipline to practical problems	.836
The criteria for tenure in my academic department are broad enough to include all of the various forms of scholarship in which faculty are engaged	.828
The majority of my departmental colleagues value the Scholarship of Teaching and Learning (scholarship that contributes to the improvement of college teaching /student learning	.825
In my academic department, various forms of scholarship receive some weight in the awarding of tenure	.803
In my academic department, all forms of scholarship receive equivalent weight in the promotion of faculty members	.702
I am satisfied with how scholarship is evaluated in my department	.655

of college teaching /student learning," "The criteria for tenure in my academic department are broad enough to include all of the various forms of scholarship in which faculty are engaged," "In my academic department, various forms of scholarship receive some weight in the awarding of tenure," "In my academic department, all forms of scholarship receive equivalent weight in the promotion of faculty members," "I am satisfied with how scholarship is evaluated in my department."The resulting Cronbach's Alpha was .91. This factor was labeled, "Perceived Departmental Reward".

A composite score was calculated based on the mean of the items which had their primary loadings on the factor "Perceived Departmental Reward." Descriptive statistics are

presented in Table 25. The skewness and kurtosis were well within a tolerable range for assuming a normal distribution and examination of the histograms suggested that the distributions looked approximately normal.

Table 25.

Descriptive statistics for the Perceived Departmental Reward Factor (N = 290)

	No. of items	*M* (*SD*)	Skewness	Kurtosis	Alpha
Perceived Departmental Reward	7	2.66 (.57)	-.119	-.04	.91

The sixth research question examined in this study was: "Does departmental socialization serve as a predictor of the desire to conduct the scholarship of teaching and learning and the scholarship of professional practice?" The null hypothesis examined in related to this question was: "There is no relationship between socialization in the department and faculty desire to conduct of the two Boyer's alternatives domains of scholarship: scholarship of teaching and learning and the scholarship of extension/professional practice." A hierarchical multiple regression analysis was conducted to determine if departmental socialization served as a predictor of faculty desire to conduct these two forms of scholarship. Summary tables of the multiple regression results are included in this section to aid in the discussion of the statistical analysis.

Multiple Regression Results for the Desire to Conduct the Scholarship of Teaching and Learning

Before applying any statistical technique the fit between the data and some basic assumptions underlying multivariate statistics need to be determined (Tabachnick and Fidell,

2007). Pearson Correlations were calculated among the eleven predictive variables to check for multicollinearity and singularity before computing the hierarchical regression model. Multicollinearity is a condition in which the independent variables are highly correlated (.90 or greater) and singularity is when the independent variables are perfectly correlated and one independent variable is a combination of one or more of the other independent variables. If either multicollinearity or singularity exists, then the independent variables are redundant with one another. If one of these conditions exists, then one independent variable does not add any predictive value over another independent variable (Tabachnick and Fidell, 2007). The Pearson Correlation test for multicollinearity and singularity proved that none of the eleven were intercorrelated, and all could be used in the Research Question six hierarchical regression models.

After the initial exploration of the variables, two hierarchical multiple regression analyses were conducted to determine the predictors of faculty desire to conduct the two scholarly domains: 1) scholarship of teaching and learning and 2) scholarship of extension/professional practice. The conceptual and theoretical framework for each model was the same for each analysis; however the independent variables within each model varied only in respondents' individual value for that scholarly domain based upon the dependent variable (refer to Figure 16).

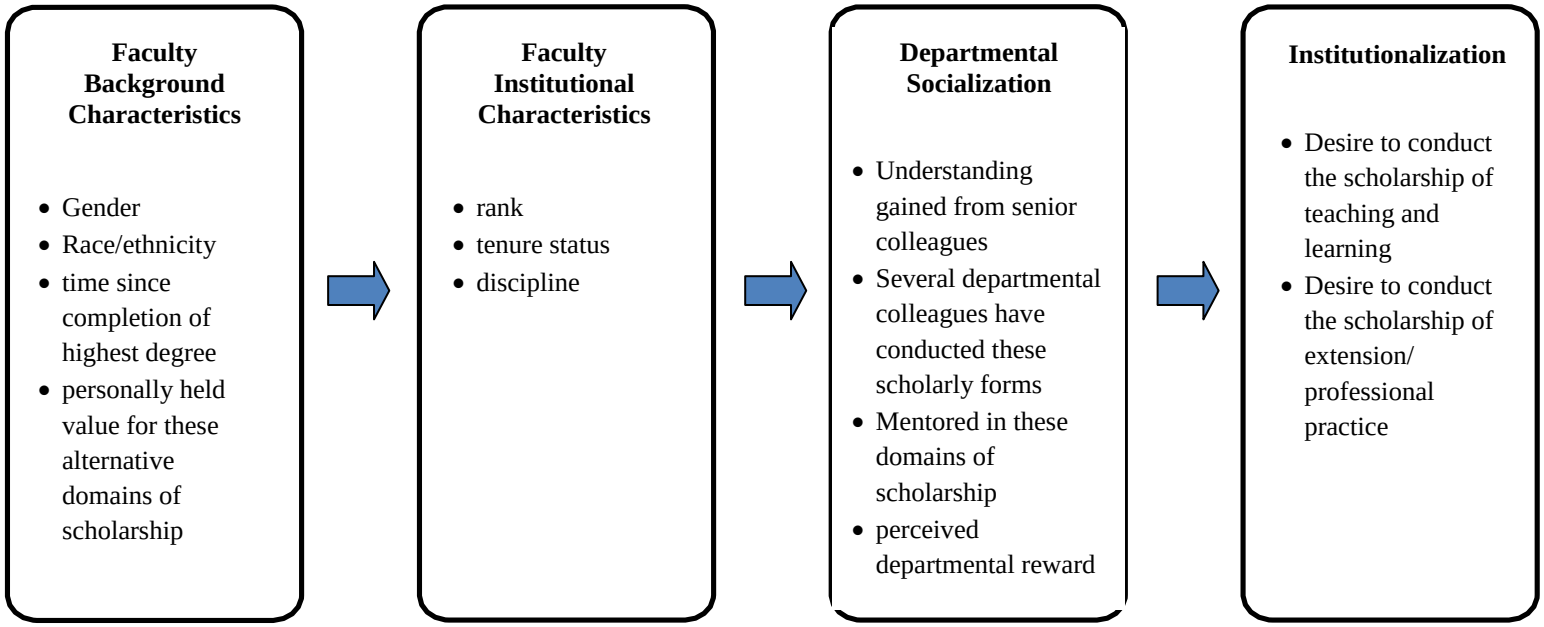

Figure 16. Model for the Institutionalization of New Domains of Scholarship (MINDS)

The first model examined the relationship between the independent variables and faculty desire to conduct the scholarship of teaching and learning at the university. Variables were entered into three blocks of a hierarchical regression model. In the first block, items that addressed faculty characteristics with which they enter the institution "gender," "race/ethnicity," "I value scholarship that contributes to the improvement of college teaching" and "time since degree completion" were entered into the model. Block 3 addressed departmental socialization, including "I am gaining or have gained an understanding of what scholarship is valued from observing my senior colleagues in the department," "Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice," "I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU," and the "perceived departmental reward" construct.

Background Characteristics (Block 1). When examining the relationship between the independent variables and faculty desire to conduct the scholarship of teaching and learning, the first block of the analysis (faculty background characteristics) revealed that individual value for the scholarship of teaching and learning positively predicted the desire to conduct SoTL (β = .556, $p < .001$). This indicates that the more likely someone is to value this type of scholarship, the more likely they are to want to pursue it. Time since highest degree also served as a significant predictor of desire to conduct SoTL (β = -.218, $p < .01$), but was a negative predictor. This indicates the greater a faculty member's professional age, the less likely they are to want to pursue SoTL. Block 1 explained 33% of the variance, significant at $p<.001$

Institutional Characteristics (Block 2). As faculty institutional characteristics were entered in block two, individual value for SoTL remained a positively significant predictor (β = .556, $p <$

.001). Time since degree (or professional age) was no longer a statistically significant predictor of faculty desire to pursue SoTL. In Block 2, faculty institutional characteristics were entered into the model, including "rank (entered into the regression as 'Assistant Professor' and 'Associate Professor')," "tenure status," and "Biglan's hard or soft discipline," but none of the institutional characteristic variables were statistically significant predictors of faculty desire to conduct SoTL. The block also did not have a significant change in R^2.

Institutional Characteristics (Block 3). When the departmental socialization block was entered, including the perceived departmental rewards construct, faculty desire to conduct the scholarship of teaching and learning was still positively predicted by individual value for SoTL ($\beta = .533$, $p < .001$). The perceived departmental rewards construct ($\beta = -.293$, $p < .001$) became a significant negative predictor, suggesting that faculty who do not perceive they will be rewarded for the scholarship of teaching and learning will not want to conduct it. Several of my colleagues have conducted either the scholarship of teaching and learning or the scholarship of extension/professional practice was a positive predictor ($\beta = .122$, $p < .05$), suggesting that observation and modeling of these scholarly domains contributes positively to faculty desire to conduct them. Finally, I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU was also a positive predictor ($\beta = .191$, $p < .01$), indicating that mentoring or modeling is a positive contributor to faculty desire to conduct these scholarly domains. This final block had a statistically significant increase in R^2 of .073 ($p < .001$). Thus, I was able to reject the null hypothesis that no relationship exists between socialization in the department and faculty desire to conduct the scholarship of teaching and learning. The full model contributed to 40% of the variance in faculty desire to conduct the scholarship of teaching and learning. The Anova table

indicates that the model as a whole was significant ($F(12, 197) = 12.54$, $p < .001$). See Table 26 for a complete presentation of the regression results.

Table 26.

Hierarchical Multiple Regression Analysis: Faculty Desire to Conduct the Scholarship of Teaching and Learning

Predictor	Block 1 β	Block 2 β	Block 3 β
Block 1: Faculty Background Characteristics			
Individual value for the scholarly domain	.556**	.556**	.533**
Time since highest degree	-.218**	-.142	-.142
Gender	-.046	-.019	-.024
Race/Ethnicity	-.011	.003	-.013
Block 2: Faculty Institutional Characteristics			
Tenure Status		-.150	-.094
Biglan's hard or soft		-.008	-.014
Assistant Professor		-.057	-.052
Associate Professor		.133	.074
Block 3: Departmental Socialization			
Perceived departmental reward			-.293**
Several of my colleagues have conducted			.122*
Gaining an understanding through observation			.044
Mentored in the alternative scholarly domains			.191*
R^2	.347	.360	.433
Adjusted R^2	.334	.339	.399
F	27.261	14.158	12.54
ΔR^2		.013	.073
ΔF		1.037	6.310

*$p \leq .05$ level. **$p \leq .01$.

Multiple Regression Results for the Desire to Conduct the Scholarship of Professional Practice

The second regression model examined the relationship between the independent variables and faculty desire to conduct the scholarship of extension/professional practice. Multicollinearity was again checked using Pearson Correlations among the predictive variables. As none of the correlations reached the .80 threshold, the analysis shows that no two variables were closely related.

Hierarchical multiple regression analysis was then employed to predict the desire to conduct the scholarship of professional practice/extension. Variables again were entered into four blocks of a hierarchical regression model. Similar to the first regression, items that addressed faculty characteristics with which they enter the institution "gender," "race/ethnicity," "I value scholarship that applies the knowledge and skill of my academic discipline to practical problems," and "time since degree completion" were entered into Block 1. In Block 2, faculty characteristics after entering the institution were entered into the model "rank (entered into the regression as 'Assistant Professor' and 'Associate Professor')," "tenure," and "Biglan's hard or soft discipline." Block 3 addressed departmental socialization, including "I am gaining or have gained an understanding of what scholarship is valued from observing my senior colleagues in the department," "Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice," "I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU," and the "perceived departmental reward" construct.

Background Characteristics (Block 1). The results in Table 28 below show that "I value scholarship that applies the knowledge and skill of my academic discipline to practical problems" had a statistically significant positive effect on faculty desire to conduct the scholarship of professional practice/extension, ($\beta = .352$, $p < .001$).). This indicates that the more likely someone is to value this type of scholarship, the more likely they are to want to pursue it. "Time since highest degree (or professional age)" also served as a significant predictor of desire to conduct the scholarship of extension/professional practice ($\beta = -.145$, $p < .05$), but was a negative predictor. Similar to the first regression, this suggests that the greater a faculty member's professional age, the less likely they are want to pursue this type of scholarship. Block 1 explained 17% of the variance, significant at $p<.001$.

Institutional Characteristics (Block 2). Similar to the other regression model, Block 2 did not have a significant change in R^2. Also similar to the first regression model, "time since highest degree (or professional age)" was no longer a significant predictor, but "I value scholarship that applies the knowledge and skill of my academic discipline to practical problems" still held at $\beta = .408$, $p < .001$. None of the institutional characteristics were statistically significant predictors of faculty desire to conduct the scholarship of extension/professional practice.

Departmental Socialization (Block 3). The final block of departmental socialization variables had several statistically significant predictors of faculty desire to conduct the scholarship of extension/professional practice. "I value scholarship that applies the knowledge and skill of my academic discipline to practical problems" was again statistically significant ($\beta = .341$, $p < .001$)." This continues to indicate that individually-held value for the form of scholarship is a strong predictor of faculty desire to want to pursue the scholarly domain.

"Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice ($\beta = .252$, $p < .001$)" had a greater statistically significant effect than it did for the scholarship of teaching and learning. "I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU, ($\beta = .199$, $p < .01$)" also had a statistically significant positive effects on faculty desire to conduct the scholarship of professional practice/extension. Finally, the "perceived departmental reward" construct again had a statistically significant negative effect on faculty desire to conduct the scholarship of professional practice/extension, similar to its negative effect on faculty desire to conduct SoTL ($\beta = -.205$, $p < .01$). This final block had a significant increase in R^2 of .098 ($p<.001$). Thus, the null hypothesis that no relationship exists between socialization in the department and faculty desire to conduct the scholarship of professional practice/extension was rejected. Table 27 shows that the full model contributed to 27% of the variance in faculty desire to conduct the scholarship of professional practice/extension. The Anova table indicates that the model as a whole was significant ($F(12, 190) = 8.77$, $p < .001$).

Table 27.

Hierarchical Multiple Regression Analysis: Faculty Desire to Conduct the Scholarship of Extension/Professional Practice

Predictor	Block 1 β	Block 2 β	Block 3 β
Block 1: Faculty Background Characteristics			
Individual value for the scholarly domain	.400**	.408**	.341**
Time since highest degree	-.145*	-.039	-.009
Race/Ethnicity	-.056	-.034	-.032
Gender	-.078	-.022	-.012
Block 2: Faculty Institutional Characteristics			
Tenure Status		-.179	-.078
Biglan's hard or soft		-.127	-.126
Assistant Professor		-.060	-.044
Associate Professor		.128	.112
Block 3: Departmental Socialization			
Perceived departmental reward			-.205*
Several of my colleagues have conducted			.252**
Gaining an understanding through observation			.056
Mentored in the alternative scholarly domains			.199*
Adjusted R^2	.169	.183	.269
F	11.284	6.640	7.201
ΔR^2		.029	.098
ΔF		1.812	6.749

*$p \leq .05$ level. **$p \leq .01$.

Qualitative Analysis

The instrument collected included two open-ended questions which participants responded to with words of their choice. To make sense of the social reality of the faculty respondents related to scholarship, the raw data from the two open-ended questions were

condensed into themes based on inference and interpretation. This process uses inductive reasoning, by which themes emerge from the data through the researcher's careful examination and constant comparison.

Question 1: Explaining Factors that influenced/contributed to their learning of the scholarly expectations of their department

Sixty-nine percent of respondents (n=214) provided their perspective on the factors that influenced/contributed to their learning of the scholarly expectations of their department. Several themes emerge from the responses: observation of other colleagues, annual reviews, informal conversations with faculty, conversations with the department chair or mentor, and participation on the promotion and evaluation committee. Responses were mixed and issues discussed were positive and negative. Respondents commended the institution and departments on several facets: workshops offered by the Center for Excellence in Learning and Teaching (CELT) proved helpful, some had good mentoring opportunities, departments heads could provide clarity, and opportunities to participate on the Promotion and Evaluation Committee as early as possible provides insights. Some individual actual comments, organized by theme, included:

Observation of other colleagues

A significant number of faculty highlighted the benefit of the observation of their other colleagues as a contributor to learning the scholarly expectations of their department. The respondents also reported how informal conversations, promotion and tenure decisions and mentoring played a role as well. One respondent remarked about totally, terrifyingly knowing what it takes to get fired.

- "Mentoring and observation of colleagues' success or failure through the years,"

- “Observing my colleagues, and observing those colleagues that had the most influence in impacting departmental decisions,”
- “Faculty meetings, lunches, private discussions, observations of promotion/tenure/hiring decisions and resulting discussion,”
- “Observing colleagues going through the tenure process and participating in the process both as a faculty member applying for P&T and as a tenured faculty member participating in the process,”
- “All of my senior colleagues, including my departmentally-appointed mentor, made the requirements quite clear. In addition a member of our faculty was denied tenure during my time here. I get it. I totally, terrifyingly get what it takes to get fired,”
- “Observing the promotions of those junior faculty to engaged in the traditional method of scholarship in the discipline, and the denial of tenure to those working in SoTL,”
- “Observation of colleagues' actions and discussions; mentoring program within the department,”
- “Scholarship is broadly defined in our criteria for evaluation, but my view of valued scholarship was completely determined by empirical observation,”
- “Watching others go through the P&T process,”
- “Observing how colleagues were treated,”

Annual Reviews

- “Previous annual reviews that emphasize increasing the numbers of publications and decreasing excellence in classroom teaching,”
- “College and university guidelines; annual performance evaluations; informal and formal discussions with colleagues; college and university workshops on p&t,”

- "Department chair expectations, annual reviews, research climate of department and college,"

Participation on the Promotion and Tenure Committee

- "Observation of promotion and tenure evaluations and serving on the faculty evaluation committee,"
- "Annual Professional Evaluation Committee meetings. Unfortunately the expectations seem to change with committee members. One year competitive grants and scholarship of extension is valued, the next year it is not,"
- "Having served many times on the Promotion and Tenure committee at the department and college levels, I know that there are so few publishing opportunities for SoTL that most work in this area is relegated to conference presentations which are not valued much."

Conversations with the department chair or a mentor

- "Department chair's sage advice. / Sitting on review committee. / Mentoring from a faculty mentor. / Hall talk,"
- "Department chair guidance; guidance of senior faculty in departments other than mine; reading ISU P & T documents. Discussions of Boyer; this was being discussed alot when I was a junior faculty member,"
- "My department chair. Also important were the workshops for junior tenure-eligible faculty on this issue of the packet, and distinctions between scholarly work and scholarship. The workshops included presentations by CELT and were practical and helpful,"
- "Dept chair; other faculty,"

- “Discussions with department chair, faculty mentor, and evidence from other members of the department that were most recently awarded tenure,”
- “Frequent meetings with a mentor (assigned by my department's chair) and meetings with the department chair were helpful in explaining the departments expectations,”
- “Meetings with promotion and tenure committee, communication with chair,”

Informal conversations with faculty

- “Discussion in faculty meetings / discussion in dept. committee meetings / one-on-one discussions with colleagues,”
- “Informal discussions with colleagues,”
- “Talking with colleagues,”
- “Seeing previous faculty complete the promotion and tenure process / Speaking with others outside my department to understand the university criteria,”
- “Interacting with other colleagues to discuss appropriate ways of conducting scholarship,”
- “Almost all my understanding was gained through informal discussions and observation of what is valued,”
- “I attended all of the new faculty orientation events and spoke with colleagues in my department. I've also observed my colleagues in job searches for new faculty. Research is king, dollars brought into the department and college are most important,”

Other

- “Learn about such scholarship at the new faculty orientation three years ago (via CELT),”
- “The primary factor is a department open to the scholarship of teaching and learning,”
- “There's no simple answer to this question,”

- "Participation in CELT classes and Teaching Partners Program through CELT,"
- "The most important thing is a grant,"
- "Mostly trial and error,"
- "My department does not count any SOTL contributions toward P&T. Therefore, there are no expectations."

Barriers to conducting the scholarship of professional practice and the scholarship of teaching and learning

Seventy-two percent of the respondents addressed the open-ended question regarding what, if any, barriers have you encountered to conducting either the scholarship of teaching and learning or the scholarship of extension/professional practice? Like the prior open-ended question, several themes emerged: perceptions of a lack of departmental and institutional value, time, interest, understanding, and no barriers. Some of the actual comments included:

Perceptions of a lack of departmental and institutional value

- "Although my department does understand scholarship of teaching and learning and extension, it would be difficult to get tenure based just on that. It is also difficult to get grants in these areas and money from external grants is an important factor in promotion and tenure,"
- "Both hold lesser value than research scholarship in majority of the department. Even peer reviewed material is treated with less respect,"
- "Both types are considered to be much less valuable than fundamental research of a scientific nature and funded by NSF. I was actually asked during my interview "Where is the science in your research?" since at least 50% of my scholarship is in applied research,"
- "Concern about how it will be valued for promotion,"

- “Hard to get the numbers needed to get a peer reviewed publication. Also traditional research is much more heavily emphasized and valued than scholarship of teaching extension/professional practice. They do like our work, but it does not count as heavily,”
- “Scholarship related to teaching and learning has never been on the same level of appreciation as that of traditional research in disciplinary areas, especially in terms of rewards and recognition,”
- “A focus on publishing on pure research in my field,”
- “How to count it? - meaning is SoTL worth as much as more traditional types of academic scholarship (e.g., is a textbook the equivalent of a monograph or just worth the value of an article?),”
- “I don't think this would be greatly valued in my department or college. They may say that they are but I'm not sure that anyone would follow through with a vote for tenure or promotion based on the scholarship of teaching,”
- “I have been told, frankly, by senior colleagues that such work is not valued in their consideration of promotion/tenure materials,”
- “I personally have encountered few barriers. However, if I did want to conduct scholarship of teaching and learning, I would be concerned that not all my colleagues would value it. Some might perceive it as evidence of an inability to conduct scientific research,”
- “I published a video on effective teaching practices which my post-tenure committee said would be considered professional practice and should not placed under research publications on my vita. I disagreed,”
- “Ignorance of what constitutes the "scholarly" aspect of such work,”

- “Insufficient recognition of the value of scholarship of teaching and learning,”
- “It counts...but, it doesn't really count. Books and peer reviewed academic journal articles in only top tier journals "count." Really the articles only "count" if they accompany a book. So, I guess the barrier is departmental culture,”
- “It's not really valued - we pay lip service to the scholarship of teaching, but we all know what counts is peer-reviewed journal articles and external grants. If I were a lousy teacher and a great researcher, I'd still get tenure. Not so if I were a lousy researcher and a great teacher,”
- “I've been told they are not going to get me tenure, only published research in my field will get me tenure,”
- “I'd say that there are two primary barriers. The first is my departmental culture, which is heavily invested in the publication of books, as I explain in D1. The second is the culture of the university as a whole, which is highly focused on the sciences,”
- “Little support or recognition by my peers,”
- “Many barriers, one size fits all mentality,”
- “Many faculty do not fully understand or value at the same level the scholarship of extension and professional practice - they see it as less rigorous as their research or classroom teaching...many of the faculty in my department have never been involved in it,”
- “My department and my college view both of these as unimportant at best and a waste of time at worst,”

- “My department does not seriously consider the scholarship of teaching and learning as a priority for promotion or tenure. They respect the activities broadly speaking, but are really ONLY interested in external funding and peer-reviewed, published work,”
- “My department is complex, with several areas, and on some occasions my work was evaluated by faculty who did not understand the work of my particular area,”
- “No barriers to conduct; barriers are on others understanding, valuing, and appreciating these scholarships,”
- “Not valued by faculty with high research appointments and sometimes not a clear signal from departmental chair / / Not enough time / / Skills understanding qualitative work and IRB constraints /,”
- “Old faculty who view it as different than what they did,”
- “Our Dean has devalued scholarship of teaching and learning and scholarship of extension/ professional practice so that while they are given little weight in the promotion and tenure process,”
- “Previous annual reviews that suggest that I spend less time thinking about teaching and more time doing research,”
- “Quality outlets are limited. Culture in department (college) is not supportive of this type of scholarship,”
- “Scholarship is frequently confused with grant dollars. That is, the amount of grant dollars brought into ISU has become much more important than scholarship in any form. This is particularly true in my department and college,”
- “Senior faculty either equate "scholarship of teaching" with good classroom practice/student evals, OR warn against doing it at all when advising junior colleagues,”

- "SOTL is not valued in my department. This culture is changing very slowly, but it is changing,"
- "That means nothing here and I would not be rewarded for it in any way. I approve of this because most pedagogical research is utter garbage done by people who are not bright enough to survive in an actual discipline with any academic rigor,"
- "The culture at ISU seems to put less value on the scholarship of extension / professional practice relative to research and discovery. I think the scholarship of teaching and learning has gained more recognition in recent years…,"
- "The university simply wants faculty to bring in research funding - more the better. And so, it takes the enthusiasm of teaching out of faculty."
- "There are prejudices against the scholarship of teaching and learning among some faculty. Some regard this research as "second class',"
- "Tyranny of single criteria - journal articles only,"
- "While my department is fairly open to a range of types of scholarship, traditional peer reviewed publications are still the most acknowledged and valued. Public scholarship, for example, is not adequately understood…"

No barriers

- "Few if any barriers have existed. Should I want to pursue that route, it was open to me,"
- "None- and frankly, I don't think the scholarship of teaching and learning should count much toward earning tenure,"
- "None. In my department such scholarship is valued, though I personally do not wish to conduct it when I believe my very limited research time and funds are best used to create new knowledge and theories, not to engage in pedagogical naval gazing,"

Time

- "Balancing the expectations of service, teaching (which includes a heavy advising load), and research (specifically obtaining external grants),"
- "Because this type of work does not typically allow the hiring of graduate students, it is more difficult to put the time in. This type of scholarship must be done entirely by the faculty member,"
- "Time and money,"
- "Time is the greatest barrier. I have a research program in my area of expertise, a heavy teaching load, and contribute to extension programs every year. There is no time to develop secondary or tertiary research programs in the SOTL or in extension practice,"
- "Just time pressure. There is a clear expectation for research publication on my field, so my time is focused on that goal first,"

Understanding

- "Just my lack of experience in this type of scholarship (i.e., Human Subjects approval, assessment methods, etc.),"
- "Lack of a sense that the venues in which such scholarship may be published are important or high-quality venues,"
- "Lack of knowledge of methodology of SOTL as compared to typical research into scientific topics in my field,"
- "Most of my colleagues have little understanding of Extension/professional practice, latch onto someone who does to fulfill their obligation of "outreach" and continue to value/pursue research,"

- "I do not engage in the scholarship of teaching. In my opinion, the scholarship of teaching and learning is not very clear in my department. Very little discussion has been spent in faculty meetings or informal meetings with the department chair and/or faculty,"

Interest

- "I don't find it very interesting -- or at least it is not my personal top priority,"
- "I was not interested in doing that kind of research,"
- "Lack of interest, as well as reward structure,"

Other

- "Hard to find mentors. For promotion research has to come first,"
- "No encouragement,"
- "No places in my field to publish this topic. Conferences rarely even publish the proceedings, so conference papers is about as far as one can go,"
- "The department ought to have a faculty development committee to mentor faculty. Our department has none. And the teaching evaluations are seen only by the faculty member and the chair and hence mediocrity in teaching has continued for many years in our department."

Summary

This study examined six research questions and five hypotheses about the relationships and group differences in faculty rank, the actual conduct of the scholarship of teaching and learning and the scholarship of extension/professional practice, departmental socialization, time since degree, gender, tenure status, academic discipline, individual values for the scholarship of teaching and learning and the scholarship of professional practice, and faculty desire to conduct these two Boyer scholarship domains.

The study began with descriptive analyses of the desiring to conduct the scholarship of teaching and learning and the scholarship of extension/professional practice. T-testing was used in this study to examine differences in the desire to conduct both types of Boyer scholarship domains by gender. Exploratory factor analysis was conducted based on Braxton et al.'s 2002 study on institutionalization of Boyer's scholarly domains to develop constructs for the conduct of both of these domains. These constructs were used to examine differences among faculty rank in the conduct of the two scholarly domains with One-way ANOVA. ANOVA was also used to examine differences among faculty rank in the desire to conduct the two scholarly domains. A hierarchical regression model was developed to determine factors that predict faculty desire to conduct each of the scholarly domains that included faculty background characteristics: gender, time since highest degree completion, individual value for each of the scholarly domains, race/ethnicity; faculty institutional characteristics: faculty rank, Biglan's hard or soft discipline, tenure status; and a departmental socialization block that included: several colleagues within the department have conducted either scholarly domain, gaining an understanding what scholarship is valued from observing senior colleagues in the department, having been mentored in the conduct of either scholarly domain and the perceived departmental reward construct. Bandura's Social Learning Theory (1986) was used to develop a hierarchical regression block for departmental socialization, and within it, a perceived departmental reward construct, to examine its predictive nature for faculty desire to conduct both Boyer scholarly domains. The dependent variables, faculty desire to conduct each of the scholarly domains, were interval variables determined by Likert scale measures. The independent variables gender, individual value for the two scholarly domains, tenure status, Biglan's hard or soft discipline, several colleagues within the department have conducted

either scholarly domain, gaining an understanding what scholarship is valued from observing senior colleagues in the department, having been mentored in the conduct of either scholarly domain, Assistant Professor, and Associate Professor were measured as dichotomous variables. Time since highest degree obtained and the perceived departmental reward construct were measured as continuous variables. Chapter 5 presents a discussion of the research findings as they relate to the literature review, conclusions, limitations of the study and recommendations for future research and practice.

CHAPTER 5. DISCUSSION OF RESULTS, IMPLICATIONS FOR PRACTICES AND POLICY, AND CONCLUSION DISCUSSION

Introduction

This section examines the purpose for which this study was designed and revisits the research questions that were posed in the first chapter. The framework around which this study was designed, and the literature-driven assumptions that guided this study, will be discussed in light of the findings. Furthermore, this section will discuss the implications of the findings for institutionalizing the two domains of Boyer's scholarship model at Iowa State University. Finally, the chapter will close by reviewing the limitations of the study, providing recommendations for further research and by explaining the conclusions that were reached.

Summary of the Study

The purpose of this study was to investigate the relationship between the faculty characteristics of gender, race/ethnicity, time since completion of highest degree, personally held value for these alternative domains of scholarship; institutional characteristics of rank, tenure status and discipline; faculty socialization within the department; and the conduct of and desire to conduct Boyer's domains of scholarship. The findings of this study, discussed below, supported the conceptual framework of Curry's Model of Innovation (1991) used by Braxton et al. in their 2002 study of institutionalization of Boyer's scholarly domains. Specifically, that for innovation to be institutionalized, it must be part of the culture; investigated in this study at the departmental level only. The conceptual framework was augmented by introducing departmental socialization as a new proxy for institutionalization of innovation in higher education. Braxton et al. (2002) posed graduate education, institutional culture, and academic reward as the proxies for institutionalization in their study. However, the three proxies alone seemed inadequate to

better understand the institutionalization of Boyer's scholarship domains. Since the importance of graduate education socialization has already been long-established in the research literature, it was determined to primarily focus on academic reward (enhanced to more broadly become departmental socialization) as the proxy for institutionalization of Boyer's scholarship domains.

Bandura's social learning theory provided the theoretical framework for departmental socialization. To accomplish this, the study reexamined Braxton et al.'s survey designed to examine the institutionalization of Boyer's scholarship domains (Braxton, Luckey, and Helland, 2002). An extensive literature review was conducted and the instrument was refined, with items both deleted from the questionnaire (due to length) and added to address Braxton et al.'s (2002) recommendations, the recommendations from Iowa State University's Center for Excellence in Learning and Teaching and the departmental socialization items based on Bandura's Social Learning theory developed with consultation from a research methodologist from the University of Northern Iowa's Center for Social and Behavioral Research. Also, two qualitative research questions provided an explanation of the experiences of faculty related to scholarship and the two alternative scholarly domains in particular.

In addition to descriptive statistics, the study used analysis of variance (ANOVA), hierarchical regression analyses, and inductive qualitative analysis to learn more about the relationships and influences of faculty conduct of and desire to conduct Boyer's domains of scholarship. The unit of analysis was the population of faculty at Iowa State University during the 2011 Spring semester. A survey instrument was created as the method of inquiry for this study.

The intent of this study was to build on previous works in an effort to establish new methods and frameworks to help understand why little has changed in faculty scholarship more

than twenty years after *Scholarship Reconsidered*. This study adds to the scholarly research and literature in the field of higher education and faculty scholarship because it operationalizes and examines how faculty socialization in the department influences the desire to conduct Boyer's domains of scholarship.

Because the study examines an entire population of faculty from all academic departments, the study also adds to the research literature on faculty conduct and perceptions of Boyer's domains of scholarship, particularly to studies focusing on faculty work in disciplines previously not explored by the literature, and studies related to scholarship at research intensive, land-grant institutions. Finally, the study contributes to the body of knowledge related to faculty work, particularly gender and faculty scholarship.

A premise of this study is that the institutionalization of new domains of faculty scholarship in a university or college is a function of what scholarly domains the faculty are socialized in their departments to conduct. The study builds from the conceptual framework (see Figure 17) used by Braxton, Luckey, and Helland (2002), and modified by the inclusion of departmental socialization (using Bandura's social learning theory) as one of the three proxies for institutionalization used by Braxton et al. (2002).

Braxton, et al. (2002) explored the institutionalization of Boyer's scholarship model using Curry's Model of Innovation (1992) as their conceptual framework where institutionalization takes effect at three levels: structural, procedural, and incorporation or institutionalization, in which the importance of the third stage, institutionalization, is stressed to sustain institutional innovations.

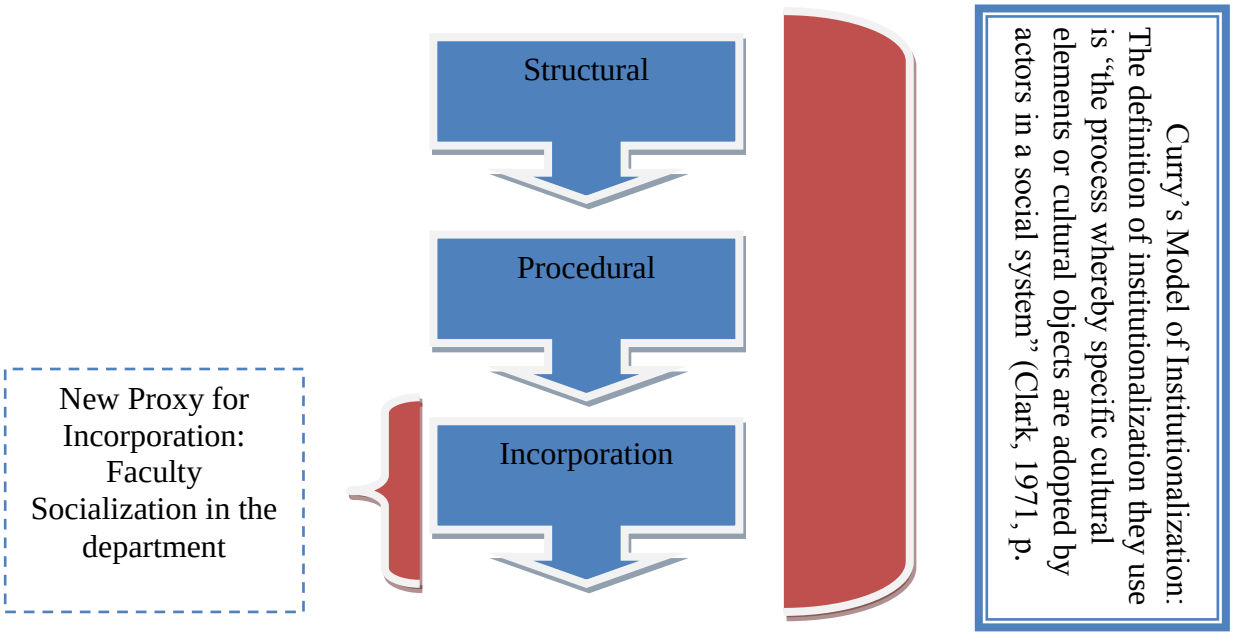

Figure 17. Conceptual framework for institutionalizing Boyer's Scholarship Model

At this third and final stage, the innovation is embodied in the values and norms (the culture) of the institution. The process by which people learn and internalize these aspects the culture is referred to as socialization.

Bandura's social learning theory provided the theoretical foundation for departmental socialization in the study. According to Bandura (1986), when faced with uncertainty about how to become socialized to a culture, social learning theory posits that individuals will model the behaviors of referent others (Bandura, 1986). In other words, human behavior is learned through interaction and observation of others in a social context (1977, 1986). Bandura's major premise is that we learn as a result of observing, talking, and listening to others in our close environment. It is through the observation of other people's actions and consequences (in the context of this

study, scholarship and its rewards), that individuals acquire rules and develop their own hypotheses about which responses are most appropriate (Bandura, 1977). Observation also teaches us the likely consequences of various behaviors. Bandura refers to this as vicarious reinforcement.

Social learning theory thus provided a theoretical framework to explain the process through which faculty members are socialized into the department as to what form(s) of scholarship to conduct. It is represented below (Figure 18) as a proxy for institutionalization of Boyer's domains of scholarship.

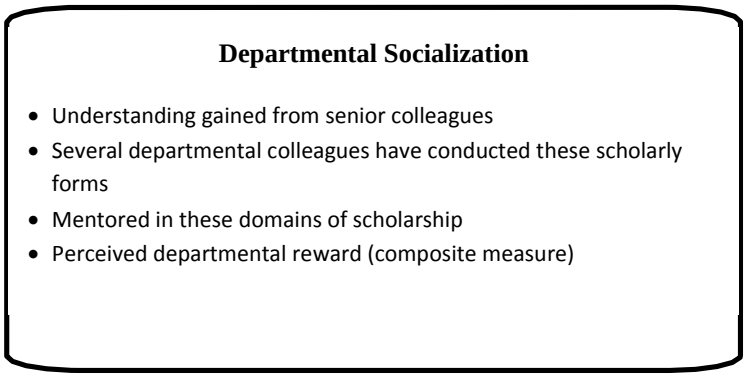

Figure 18. Departmental socialization block for regression analyses

A more complete understanding of Boyer's scholarship domains, including how they are valued, conducted, desired to be conducted, and influenced by departmental socialization; and the differences in their conduct and desire for conduct between genders and among rank, is vital to better understand whether additional change is in fact desired and needed. This study provides an important addition to the conceptual framework for learning more about these scholarly domains and how departmental socialization may be influencing their institutionalization in the academy. Perhaps even more important, this study introduces the use of Bandura's Social Learning Theory as a theoretical framework into the faculty socialization literature and presents

items and a composite measure for the three facets of Social Learning Theory: observation, modeling and perceived departmental reward.

The six research questions that guided the research on these two scholarly domains, the theoretical perspective and the conceptual framework that guide them are provided in Chapter 1. Curry's 1991 model of innovation provided the conceptual framework, Clark's definition of institutionalization provided the proxy perspective for faculty desire to pursue the two scholarly domains, and Bandura's social learning theory (1977) provided the theoretical perspective for departmental socialization.

The literature review in Chapter 2 presented an overview of Boyer's scholarly domains; the independent variables; organizational culture, socialization and social learning theory; and the prior literature on institutionalization of these scholarly domains. The review also provided a basis for addressing the research questions and hypotheses, and for determining which variables (such as race, discipline, tenure status, and gender) to consider for use in the hierarchical regression models.

Chapter 3 presented the quantitative and qualitative methodology to examine the research questions in this study. The research questions, hypotheses, research design, setting, population, data collection, variables, and analyses were stated. The chapter also discussed the ethical considerations, limitations, and delimitations of the study.

Through various descriptive, inferential, and inductive quantitative and qualitative analyses, the results of the six research questions were presented in Chapter 4. Research question one examined the demographic characteristics of all faculty respondents and those faculty who want to conduct the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice (SEPP) in the future. Research question two

explored how tenure status compared by gender and whether significant differences existed in tenure status by males and females. Independent samples t-testing was used to examine differences in tenure status by gender. Research question three similarly explored gender, but focused on its comparison by faculty rank. One-way analysis of variance was used to determine if any significant gender differences existed among faculty rank. Research question four also focused on gender, but focused on the determination as to whether significant gender differences existed in the conduct of and desire to conduct Boyer's alternative forms of scholarship. To examine these differences among rank, exploratory factor analysis was conducted on the Scholarly Outputs Scale (SOS), developed from the work of Boyer (1990), Braxton and Toombs (1982), and Pellino, Blackburn and Boberg (1984),and modified with assistance from the Center for Excellence in Learning and Teaching at Iowa State University. The exploratory factor analysis resulted in two scholarly constructs, the conduct of the scholarship of teaching and learning (SoTL) and the conduct of the scholarship of extension/professional practice.

The results of two hierarchical regression models were also reported in Chapter 4, one each for the desire to conduct SoTL and the scholarship of extension/professional practice. Each model was computed with three blocks: faculty's background characteristics in Block 1, faculty's institutional characteristics in Block 2, and departmental socialization in Block 3. The departmental socialization block represented the three facets of Bandura's Social Learning Theory: observation, modeling, and perceived reward. Many of the original instrument's departmental statements related to perceived reward were retained with slight modification. A research methodologist at the University of Northern Iowa's Center for Social and Behavioral Research assisted with the development of the additional items needed to capture observation

and modeling. Exploratory Factor Analysis resulted in a construct of perceived departmental reward. Observation and modeling were entered into the block as items.

Lastly, Chapter 4 concluded with inductive qualitative analysis of the two open-ended questions included in the study. The following sections focus on the research results related to background, institutional characteristics, departmental socialization, and institutionalization within the context of the literature review presented in chapter 2.

Findings of the Study

The findings from this study are presented using the six research questions and five hypotheses from this study. A discussion of the literature review is included to show how findings from this study relate to findings from prior research.

Research Question #1

The first research question examined in this study was: "What are the demographic characteristics of all faculty respondents and those faculty who desire to conduct the two alternative scholarly domains?" The dataset was delimited to two different datasets: the desire to conduct the scholarship of teaching and learning and the desire to conduct the scholarship of extension/professional practice. Descriptive statistics were then run to collect information on the frequency distribution and means on faculty's background and institutional characteristics.

The means for the desire to conduct both SoTL and the scholarship of extension/professional practice were 2.99 and 2.91, respectively, suggesting faculty interest in conducting these forms of scholarship is strong. The range for these measures was 1-4, with 1 being strongly disagree and 4 being strongly agree. Finally, the mean perceived departmental reward SoTL was 2.62, and similarly, was 2.64 for the scholarship of extension/professional practice, with the range for this construct being 1-4, with 1 being strongly disagree and 4 being

strongly agree. This suggests that they are uncertain about the departmental reward for the two scholarly domains. Interest is strong, but uncertainty remains about the departmental reward. 70% of the faculty have conducted SoTL (as defined by Braxton et al. (2002) but including both published and unpublished) and 87% of the faculty conducted the scholarship of extension/professional practice (also as defined by Braxton et al. (2002) but including both published and unpublished). Finally, 68% and 59% of the faculty desire to conduct SoTL and the scholarship of extension/professional practice, respectively (refer to Table 28).

Table 28.

Percentage of Faculty Who Desire to Conduct the Two Scholarly Domains

Scholarly Domain	% of faculty who have conducted the alternative scholarship	% of faculty who desire to conduct the alternative scholarship
SoTL	70%	68%
Scholarship of Extension/Professional Practice	87%	59%

The twenty-eight percentage point difference in the percentage of faculty who are conducting what Braxton et al. (2002) categorized as scholarly outputs (both published and unpublished) in the scholarship of extension/professional practice as opposed to the percentage of faculty who desire to conduct the scholarship of extension/professional practice in the future is substantial. It's posited that the substantial gap between the faculty conduct of the scholarly work and the desire to conduct the scholarship in this domain could be due to the perception of what actually constitutes the scholarship of extension/professional practice by Iowa State University faculty. Braxton et al. (2002) included numerous scholarly outputs, both published and unpublished, as scholarship of extension/professional practice that Iowa State University, in reviewing their promotion and tenure guidelines and in discussion with leadership from their

Center for Excellence in Learning and Teaching, would not in fact count as scholarship, but rather, in most instances, would likely count as service (i.e. providing leadership on governmental or non-profit boards). Since the survey instrument, like Braxton et al.'s (2002) instrument, did not reference any of the scholarly outputs or activities as a particular scholarly domain, it is likely that the gap is accounted for by the misalignment in what Boyer intended to be recognized as the scholarship of extension/professional practice, what other authors have since delineated, and what in fact actually is recognized as the scholarship of extension/professional practice.

There was strikingly little difference between the two alternative scholarly domains' background characteristics. This suggests that a faculty member who wants to conduct the scholarship of teaching and learning in the future may also likely be interested in conducting the scholarship of extension/professional practice in the future and vice versa.

While not a research question, one of the background characteristics in the new model included individual value for the two domains of scholarship. One brings their own values and beliefs to a departmental culture, but that individual value and belief is something that, given the literature on the role of graduate education socialization in faculty pursuit of these scholarly domains, an individual brings with them as a background characteristic. Individual value for each of the two domains of scholarship was striking, each at about 97% after agree and strongly agree were combined (see Figures 19 and 20).

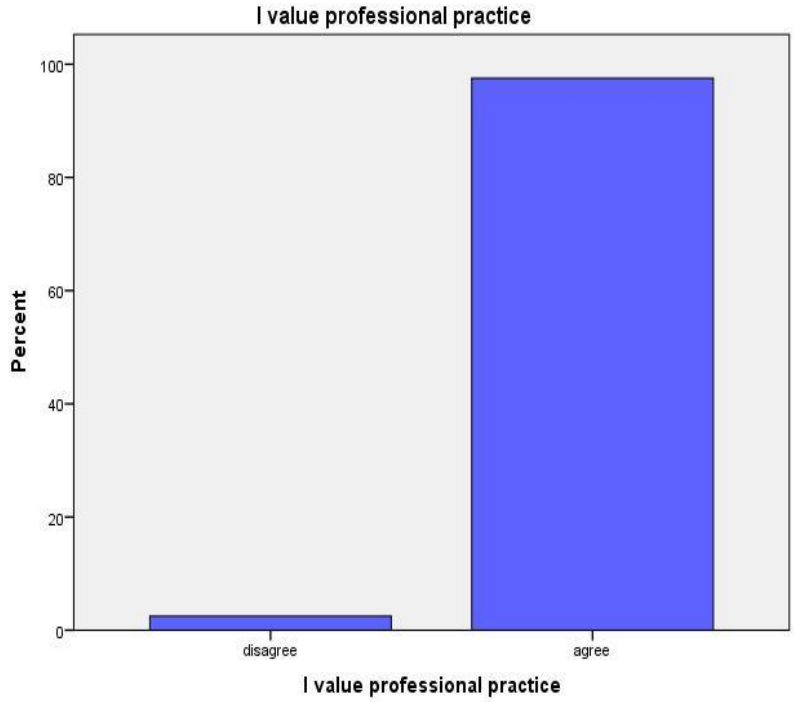

Figure 19. Individual Value for the Scholarship of Extension/Professional Practice

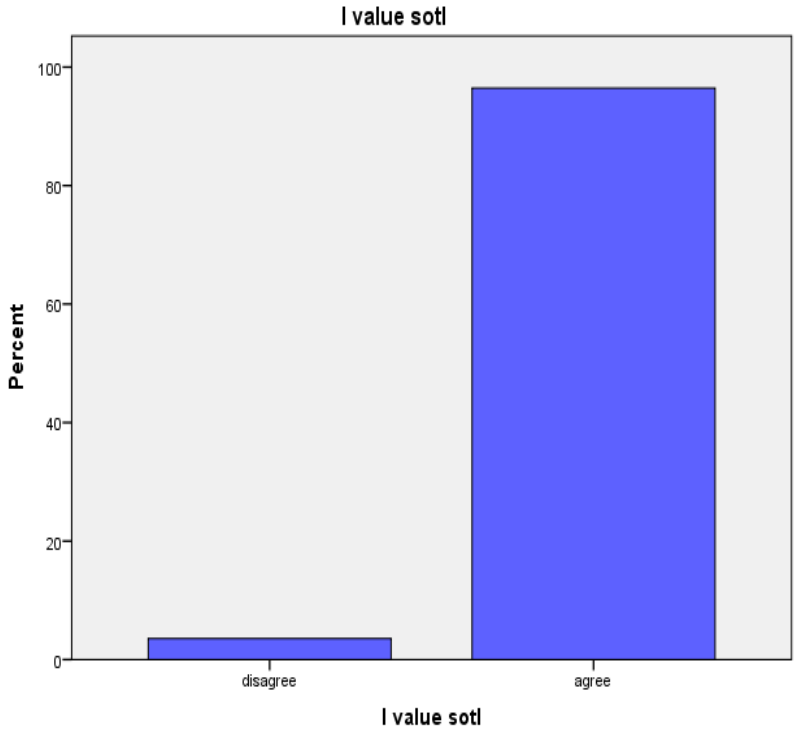

Figure 20. Individual value for the Scholarship of Teaching and Learning

However, when asked whether their department valued the two scholarly domains, only 59% of faculty respondents believed their department valued SoTL and SEPP after combining agree and strongly agree. If almost everyone individually values the two scholarly domains, what accounts for the almost 40 percentage point difference when asked about departmental value?

To shed a little more light on this question, see Figure 23 below, where responses regarding faculty satisfaction with the evaluation of scholarship are displayed. While not alarming, it is worth displaying for consideration as to why 30% of the faculty are dissatisfied with the evaluation of scholarship.

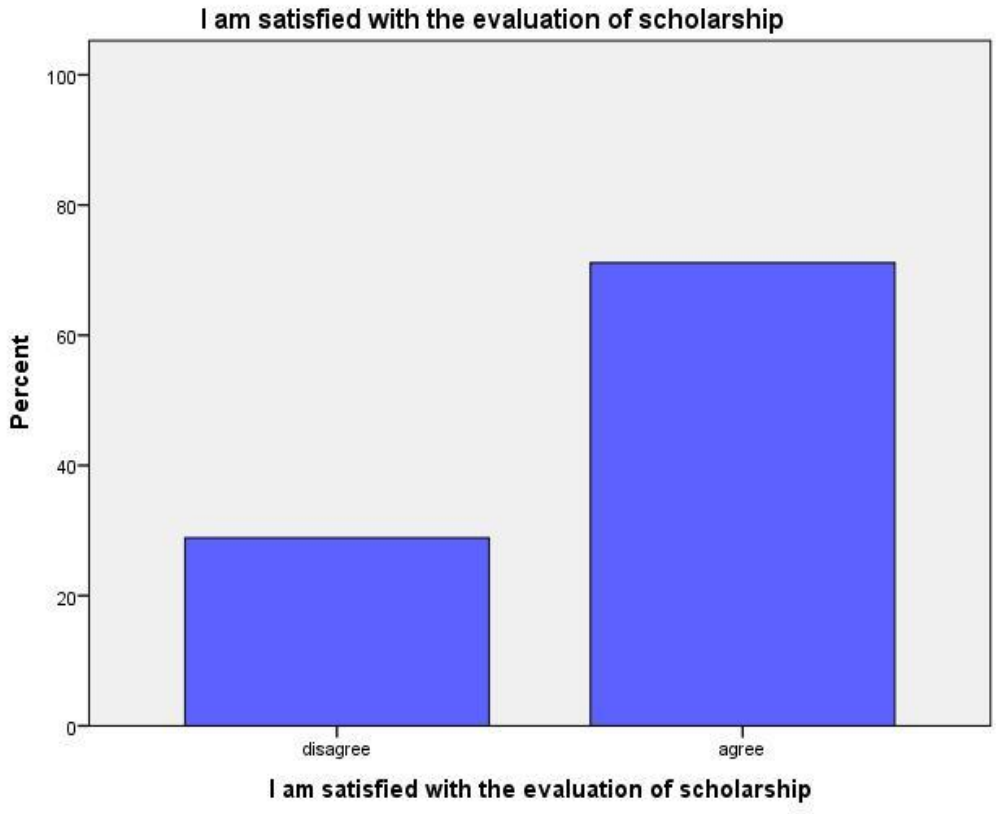

Figure 21. Faculty satisfaction with the evaluation of scholarship

Research questions 2 & 3

The second and third null hypotheses examined in this study were: "There is no significant difference in tenure status between males and females" and "There is no significant difference in gender among faculty rank."

A study of ten Association of American Universities institutions revealed that female faculty trail males and minorities trail non-minorities in the rates at which they achieve tenure (Dooris & Guidos, 2006). With regard to rank, scholars have noted that women have historically faced challenges in entering academe and moving up from lower ranks (assistant or associate) to higher ranks (full or senior) (Glazer- Raymo, 1999; Harding, 1991; Neumann and Peterson, 1997; Perna, 2001b, 2005; Rossiter, 1982; Terosky, Phifer, and Neumann, 2008). Research from a HERI national survey indicated that male assistant professors are 23 percent more likely to earn tenure than females, and that male professors are 35 percent more likely than female professors to be promoted to professors each year after tenure is earned (Williams, Alon, and Bornstein, 2006, p. 80). Given these lower tenure and promotion ratios for female faculty, the full dataset's composition by gender was explored in relationship to tenure status and faculty rank. A greater number of male respondents (80%) in the full dataset were in fact tenured as compared to female respondents (58%). Professors were more than three times likely to be male than female. Females were slightly more likely to be associate and assistant professors. Finally, females were more than twice as likely to be lecturers as males, as illustrated in figure 22.

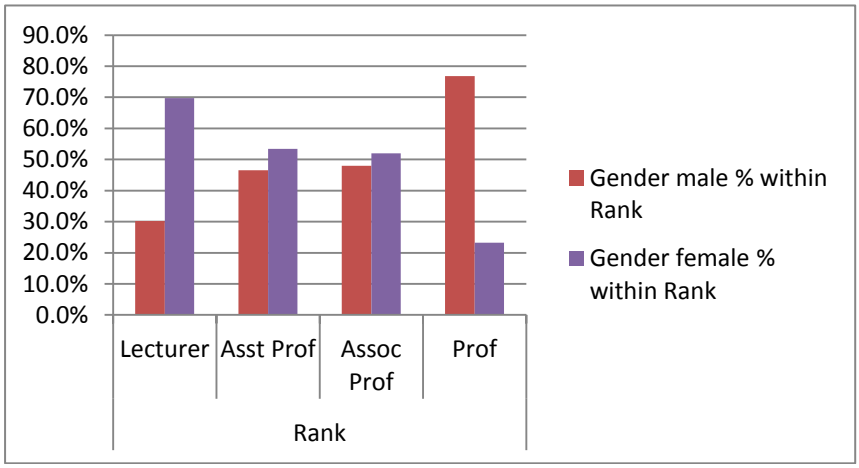

Figure 22. Faculty rank by gender

Reflection on such a striking difference generated a plausible explanation for some of the difference, as male faculty respondents (23.13 years) at Iowa State University (ISU) were on average almost five years older in their professional age (time since PhD) as female faculty respondents (18.24 years) at ISU. However, the literature revealed that what is traditionally viewed as scholarship by faculty of color and women is often not viewed as "legitimate" scholarship (Terosky, Phifer, & Neumann, 2008). Thus, an explanation for the significant gender differences in faculty rank and tenure status could be made additionally plausible by the types of scholarship male and female faculty choose to pursue, explored next in Research Question 4.

Research Question 4: Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship between gender?

The fourth null hypothesis examined in this study was: "There is no statistically difference in the conduct of and desire to conduct Boyer's alternative forms of scholarship between males and females." Findings from previous research find women desire to use their scholarship to uplift other members of their race and/or gender; to solve social, economic, and educational problems; and to make research useful for the public (Chepyator-Thornson &King,

1996). Results from this study are somewhat similar to findings in the literature review, finding that after delimitation of the dataset to tenured and tenure-track faculty only, 68% and 57% of females would like to conduct the scholarship of teaching and learning and the scholarship of extension/professional practice in the future, respectively . However, the literature seems to overlook males' desire to conduct the two scholarly domains, as the findings showed that 63% and 54% of males desired to conduct the scholarship of teaching and learning and the scholarship of extension/professional practice, respectively. Inferential analysis of the desire to conduct the scholarly domains aligned with these gender similarities after the delimitation of the dataset. Mean desires to conduct both the scholarship of teaching and learning and scholarship of extension/professional practice were not statistically significant between gender groups. The earlier gender descriptive discrepancies in faculty desire to conduct the two scholarly domains were likely due to the inclusion in the dataset at that time of Lecturers.

The mean conduct of the scholarship of extension/professional practice was statistically significant between gender groups at the $p < .01$ level, while the mean conduct of the scholarship of teaching and learning was not statistically significant between gender groups. The significant difference here, however, demonstrated that there was a greater mean conduct of the scholarship of extension/professional practice among males, again differing from the literature. It's posited that given the highly-applied nature of STEM disciplines, and the strong representation of males in these disciplines, that this could explain the greater mean conduct of the scholarship of extension/professional practice among males

Research Question 5: Are there significant differences in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks?

The fifth null hypothesis examined in this study was: "There is no statistically difference in the conduct of and desire to conduct Boyer's alternative forms of scholarship among the various faculty ranks." Findings from previous studies indicated that Assistant Professors were more likely to conduct the Scholarship of Engagement in particular (Antonio, Astin, & Cress, 2000; Bellas & Toutkoushian, 1999). Results from this study indicated that the conduct of the scholarship of extension/professional practice actually increased, but was consistently high, across the three faculty ranks, Assistant Professor (M = .81), Associate Professor (M = .91) and Professor (M = .95). However, the post hoc tests suggested that among the groups, there were no statistically significant differences in the conduct of the scholarship of professional practice among Assistant Professors, Associate Professors, and Professors. Similar to the earlier differences in faculty conduct of SEPP and desire to conduct SEPP, there is a substantial difference between the comparison of rank and conduct versus the comparison of rank and desire to conduct. Assistant and Associate Professors had a greater mean desire to conduct the scholarship of professional practice than Professors: Assistant Professor (M = .64), Associate Professor (M = .67) and Professor (M = .46). Again, however, there was no statistically significant difference among the ranks in their desire to conduct SEPP.

There was a significant difference between the conduct of the scholarship of teaching and learning and faculty rank: Assistant Professor, Associate Professor and Professor. The conduct of SoTL decreased from the faculty ranks of Assistant and Associate Professor to Professor: Assistant Professor (M = .75), Associate Professor (M = .76) and Professor (M = .56). The post

hoc tests suggested that among the groups, Assistant and Associate Professors were more likely to conduct the Scholarship of Teaching and Learning than Professors.

Similarly, the mean desire to conduct the scholarship of teaching and learning was significantly different across the ranks: Assistant Professor = .70, Associate Professor = .71, and Professor = .54. As above, Assistant and Associate Professors were more likely to desire to conduct the Scholarship of Teaching and Learning than Professors.

These findings suggest that the institution should explore ways to capitalize on the existing conduct and the desire of Assistant and Associate Professors to conduct these domains of scholarship to further the mission of the institution.

Research Question 6: Does departmental socialization serve as a predictor of the desire to conduct the scholarship of teaching and learning and the scholarship of professional practice?

The eighth null hypothesis examined in this study was: "There is no relationship between socialization in the department and the desire to conduct Boyer's alternatives domains of scholarship." Two hierarchical multiple regression analyses were conducted to determine the predictors of faculty desire to conduct the two scholarly domains: 1) scholarship of teaching and learning and 2) scholarship of extension/professional practice. The conceptual and theoretical framework for each model was the same for each analysis; however the independent variables within each model varied only in respondents' individual value for that scholarly domain based upon the dependent variable (refer to Figure 23).

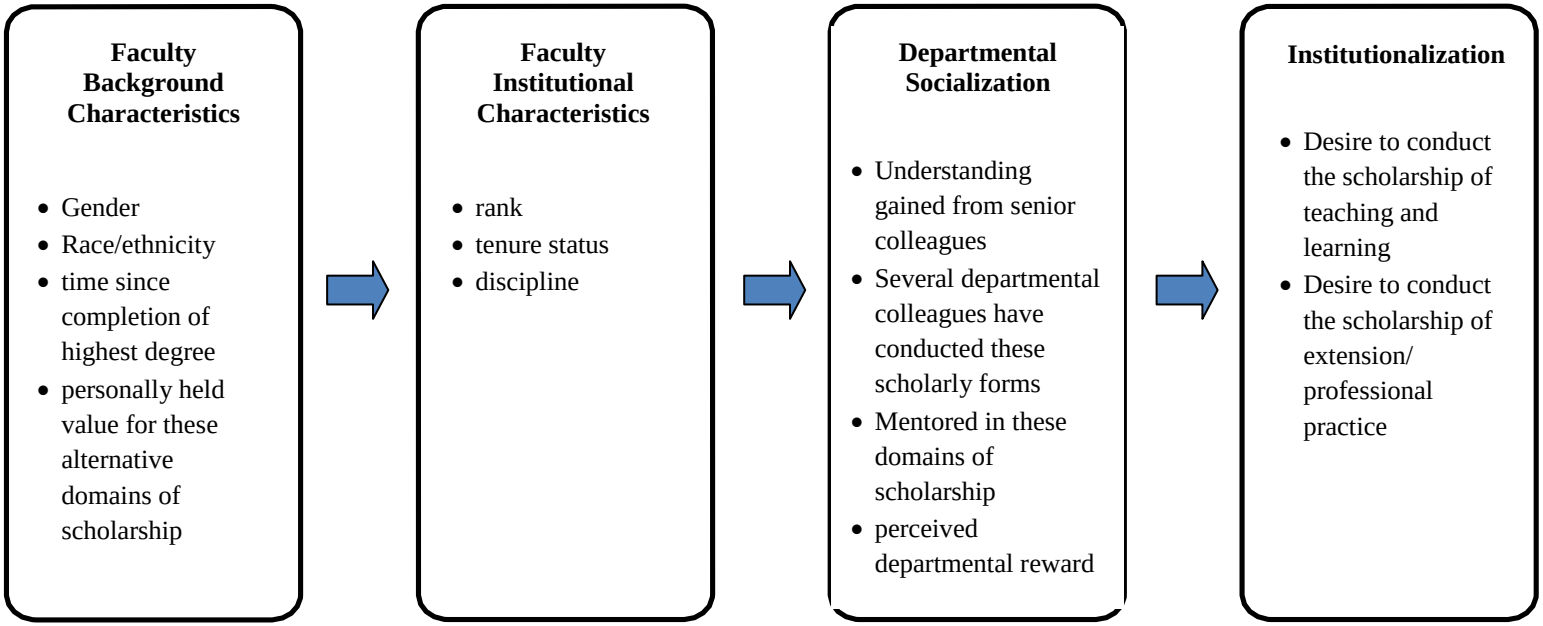

Figure 23. Twait Model for Institutionalization of New Domains of Scholarship (MINDS)

Some of the findings from this study were consistent with the literature review. Individual value for the scholarly domain (Braxton et al., 2002), Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice (Social Learning Theory's Observation), I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU (Social Learning Theory's Modeling), and Perceived departmental reward (Social Learning Theory's Vicarious Reward) were significant predictors of faculty desire to conduct scholarship in both domains.

The strongest predictor variables on faculty desire to conduct scholarship in both domains were individual value for the scholarly domain and perceived departmental reward. It is important to note that perceived departmental reward was a negative predictor. Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice (Social Learning Theory's Observation) and I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU (Social Learning Theory's Modeling) were additional strong predictor variables on faculty desire to conduct the scholarship of extension/professional practice.

Given the extent of the literature of female faculty desire to conduct these two scholarly domains, the background characteristic of gender did not influence faculty desire to conduct either of the two scholarly domains. This inconsistency with the literature is similar to the earlier research findings related to gender and the conduct of and desire to conduct the two scholarly domains. The background characteristic, time since degree, negatively influenced faculty desire

to conduct the two scholarly domains, but only in each of the first blocks entered. When blocks 2 and 3 were entered, this characteristic was no longer significant.

The block 2 faculty institutional characteristics including rank, tenure status, Biglan's hard or soft discipline, did not influence faculty desire to conduct the two scholarly domains, somewhat contrary to the literature.

Block 3, the departmental socialization proxy, contained the greatest number of significant influences on faculty desire to conduct the two scholarly domains: Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice (Social Learning Theory's Observation), I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU (Social Learning Theory's Modeling), and Perceived departmental reward (Social Learning Theory's Vicarious Reward). It is important to note, however, that perceived departmental reward was a negative predictor of faculty desire to pursue both scholarly domains. Consistent with the literature related to the importance of promotion and tenure in scholarship influence, faculty are not likely to want to pursue scholarly domains for which they perceive they will not be rewarded.

Finally, the null hypothesis that no relationship exists between socialization in the department and faculty desire to conduct the two scholarly domains was rejected. Block 3, the departmental socialization proxy, was a significant positive predictor of faculty desire to conduct the scholarly domain in both instances. Also, both scholarly domain models using Twait's Model for the Institutionalization of New Domains of Scholarship (MINDS) were significant with fairly strong adjusted R^2 (.269 SEPP and .399 SoTL).

Recommendations for future practice at Iowa State University

The results of the study validate the importance of departmental socialization on faculty desire to pursue the Scholarship of Teaching and Learning and the Scholarship of Extension/Professional Practice at the university. Given that the mission statement of Iowa State University (ISU) is to "Create, share, and apply knowledge to make Iowa and the world a better place," and strong faculty value for and interest in conducting the two scholarly domains, greater efforts to align the institutional mission with these two domains of scholarship, while maintaining excellence in the scholarship of discovery, should be explored. The mission statement is made more explicit in stating:

> "We must prepare the leaders of our nation and the world. To make the world a better place, Iowa State will call upon its great strengths in student-centered education, global collaboration, and transformational basic and applied research. Iowa State will lead in developing more sustainable ways to produce and deliver safe and nutritious food, water, materials, and energy; integrate the protection of plant, animal, and human health; and care for our environment. We will design tools and infrastructure that will create entrepreneurial opportunities. The major changes sweeping the world are creating extraordinary opportunities for Iowa State to capitalize on its land-grant mission and be at the forefront in addressing our common, global challenges.
>
> - To create knowledge, Iowa State must be a magnet for attracting outstanding students, faculty, and staff who will learn, work, and conduct world-class research and scholarship that address the challenges of the 21st century.
>
> - To share knowledge, Iowa State's faculty, staff, and students must be able to communicate with and learn from diverse populations. The University must

maintain a strong focus on student success and provide exceptional undergraduate, graduate, professional, and outreach programs that prepare students and citizens for leadership and success.

• To apply knowledge, Iowa State's faculty, staff, and students must be able to develop global partnerships to convert what they know into products, services, and information that will improve the quality of life for the citizens of Iowa, the nation, and the world."

Institutional leaders should consider ways in which to facilitate better departmental socialization for faculty scholarship in these domains, including mentoring, observation, and reward (tenure and promotion). Professional development programs are already in place at ISU for these scholarly domains, and have likely contributed to the degree of scholarly conduct that exists in both scholarly domains. For instance, the Center for Excellence in Learning and Teaching (CELT) was identified by numerous respondents in response to the open-ended questions as being instrumental in their learning of the Scholarship of Teaching and Learning. CETL offers an SoTL Scholars Program, which is a year-long experience that focuses on "…writing research questions for classroom-based research, quantitative and qualitative assessment techniques, and the types of evidence that can be used to help answer SoTL research questions. Faculty participants receive guidance from the Associate Director of CELT and fellow SoTL Scholars program participants (http://www.celt.iastate.edu/for-faculty/sotl/sotl-scholars/." Thus, the emphasis at this point in furthering the institutionalization of these two scholarly domains should be on the departmental level, shoring up the opportunities for observation, mentoring, and reward (Bandura's Social Learning Theory), and thus, enhanced departmental socialization and greater institutionalization of the two scholarly domains.

Based on the limited existence of mentoring but positive influence of mentoring on desire to conduct the two scholarly domains, ISU could develop formal mentoring programs for the departments to facilitate the socialization and integration of new faculty, paying particular attention to women and people of color, into their organizations. Helen Astin, professor emeritus at UCLA and author of *Race and Ethnicity in the American Professoriate*, stated, "It is disheartening that higher education has not done a better job in recruiting and sustaining a more diverse group of people for its faculty ranks, especially when faculty of color have shown greater commitment to what the public says it wants from its colleges: more attention to undergraduate education and greater service to the community (www.gseis.ucla.edu/heri/race_pr-95.html)." According to Antonio (2002), faculty of color were seventy-five percent more likely than Caucasian faculty to pursue an academic position with the ideal of using their position to effect societal change. Trower and Bleak (2004b) found that faculty of color were significantly less satisfied than white faculty with clarity of expectations for tenure and types of evidence required for tenure decisions; confidence that tenure decisions were based on performance rather than politics, relationships, or demographics; pressure to conform to departmental colleagues' political views; and influence they felt they had on their research focus. The lack of formal mentoring programs increases the likelihood that women and people of color may be unintentionally excluded from any informal mentoring relationships because they are demographically different from potential informal mentors (Cunningham, 1999; Davidson & Foster-Johnson, 2001). Formal mentoring programs could also address the significant difference in tenure status and rank between genders. The non-tenured status ratio was 2:1 for females (42%) as compared to males (20%). Also in the full dataset, professors were more than three times likely to be male than female. The results from this study held in a statistically significant

manner with the literature regarding gender in relation to rank and tenure status. Given that the literature indicates female faculty also are interested in the pursuit of these scholarly domains, but this study did not find a significant gender difference, mentoring programs could be beneficial in advancing female work satisfaction and advancement in rank.

Given that faculty interest is strong in both scholarly domains, but the perceived departmental rewards are uncertain, departments at Iowa State University could review their Promotion and Tenure guidelines to discuss possible greater inclusion of the two scholarly domains recognizing the disciplinary differences of possible scholarly outputs and activities. It is surmised from this study that changes at the institutional level only, as was done in 1998, does not mean that each department has since conducted a process to review and edit their promotion and tenure policies. An important consideration will be whether scholarly products other than publications will be allowable for the assessment of scholarly performance. These assessments could use the inventories developed previously and used by Braxton et al. (2002), or could use the expanded Scholarly Output Scales (SOS) developed for this study based on the recommendations of Braxton et al. (2002) and Iowa State University's Center for Excellence in Learning and Teaching (CELT). It will be important for departments to establish appropriate criteria for their discipline to assess whether such work can be considered scholarship. Since more than twenty years has passed since *Scholarship Reconsidered*, there are numerous speakers who could be brought in to facilitate workshops to foster and frame the discussion.

Limitations and Delimitations

This study is limited to only one university, Iowa State University, which is a high research intensive institution, and its entire full-time tenure, tenure-track, and non-tenure track faculty. While the study has implications for other four-year institutions of higher education, it

is not meant to be generalized beyond its immediate context. Additional limitations include the majority of faculty who chose to respond to the survey were from STEM disciplines and seventy percent of the respondents were tenured.

When investigating departmental socialization for scholarship, it was difficult to develop enough items to operationalize Bandura's social learning theory for construct creation, yet minimize the length of the instrument. "Perceived reward" became a construct through factor analysis, but observation and mentoring were entered as individual items into the model as part of the departmental socialization block. Thus, an additional limitation of this study was the difficulty of identifying items for the first time in the faculty scholarship literature which fully define departmental socialization. Additional item development for observation and modeling could possibly result in constructs for these facets of Bandura's Social Learning Theory, as opposed to individual item entry.

To address research questions four, five and six, clinicians and lecturers were delimited (excluded) from the study. Only four clinicians responded to the study. Research questions four and five explored the differences between gender and among faculty rank in the conduct of and desire to conduct these alternative scholarly domains, and lecturers do not have the same scholarly expectations as tenured and tenure-track faculty. Research question six related to departmental socialization's influence on the desire to conduct these alternative domains of scholarship. Since lecturers do not have the same scholarly expectations and are not impacted by promotion and tenure criteria, the decision was made to delimit them from the study for this question. By delimiting a total of 51 lecturers and clinicians from the original dataset, the new data set for these last three questions consisted of only tenured and tenure-track faculty.

Directions for future research

Based on the findings of this study, additional research should be conducted on the role of faculty scholarship and departmental socialization. Observation of others, mentoring, and the perceived reward for alternative forms of scholarship need to be further explored with additional research studies.

Future research on the impact of mentoring (both formal and informal) on departmental socialization experiences for faculty scholarship would add tremendous value, particularly given its emergence as a theme for how faculty learned the scholarly expectations of the department, as well as its statistically significant positive influence on faculty desire to pursue the two scholarly domains. Further research on mentoring should certainly explore the complex gender and ethnicity aspects within mentoring. Additional research should also incorporate both quantitative and qualitative methods to provide a deeper understanding of the ways in which formal and informal mentoring enhance departmental socialization of faculty scholarship.

Given that the literature finds that female faculty and faculty of color desire to pursue these two alternative forms of scholarship, this study should be replicated at other institutions to further explore this question, particularly institutions with greater diversity. This study had insufficient racial/ethnic diversity of respondents to explore any differences, and did not find any significant differences between male and female faculty in their desire to pursue the scholarship of teaching and learning and the scholarship of professional practice/extension. Future research should also explore the demographic finding that the characteristics of those who wish to pursue the scholarship of teaching and learning and the scholarship of extension/professional practice are as similar as this study reflected.

The use of more sophisticated qualitative methods to better understand the two open-ended questions would add additional depth of understanding. Also, future interviews and

observations would add additional insight into the phenomenon of faculty scholarship and departmental socialization.

The Institutionalization of Alternative Forms of Scholarship at a Research Intensive Institution dataset contains a variable to differentiate by discipline. Using Biglan's classification system for disciplines, respondents' disciplines were coded as hard or soft, similar to Braxton et al.'s (2002) study. Further analysis could also code discipline by definition of Biglan's classification of applied or pure, particularly to explore the relationship between the applied disciplines and the conduct of and desire to conduct the scholarship of professional practice/extension.

This study was conducted primarily to examine the relationship between departmental socialization as a proxy for Curry's level of incorporation and faculty desire to conduct alternative forms of scholarship (the proxy for Curry and Clark's institutionalization). As identified earlier in the literature review, several studies have already confirmed the relationship between graduate education socialization and faculty scholarship. Further research should be conducted adding graduate education socialization experiences to the instrument and thus, possibly, the new conceptual framework that emerged from this study.

A new conceptual framework emerged from the analysis of the results of the present study (see Figure 24). This new conceptual framework considered various theoretical concepts (Clark's definition of institutionalization and Bandura's Social Learning Theory) and enhanced an existing conceptual model (Curry's 1991 Model of Innovation) in its development. This new conceptual framework should continue to be developed, as mentioned above, to explore the impact of additional survey items related to Social Learning Theory as a theoretical framework for departmental socialization. Additionally, the new conceptual framework needs further

testing with a broad number of research intensive institutions nationally, as well as application to other types of Carnegie Classification institutions, similar to the work of Braxton et al. (2002) in 2002.

Conclusion

Using Braxton et al.'s (2002) definitions of structural and procedural levels of incorporation, and applying the findings of this study against these definitions, it could be argued that both the Scholarship of Teaching and Learning and the Scholarship of Extension/Professional Practice have achieved both the structural and procedural levels of incorporation. For instance, Braxton et al used both published and unpublished scholarly outcomes in the scholarly domains as an index for faculty engagement in the domains: structural level of incorporation. It is important to note that if published scholarly outcomes only were assessed, the outcome could be different. Procedural level incorporation has taken place when the conduct of the scholarly domains aligns with the institution's mission. Again, if published scholarly outcomes only were included in the analysis, the outcome could be different. As described previously, institutionalization is the level where the norms and values associated with the innovation, the two scholarly domains, have become part of the organization's culture (reviewed in this study at the departmental level). Departmental socialization was used as the proxy for institutionalization. While the block itself was a significant predictor of faculty desire to pursue the scholarly domains, the composite measure of perceived departmental reward (Braxton et al.'s (2002) proxy for institutionalization was academic reward), was a significant negative predictor for the desire to conduct both scholarly domains. Thus, it's concluded that the two scholarly domains have not yet achieved institutionalization. However, there is tremendous promise.

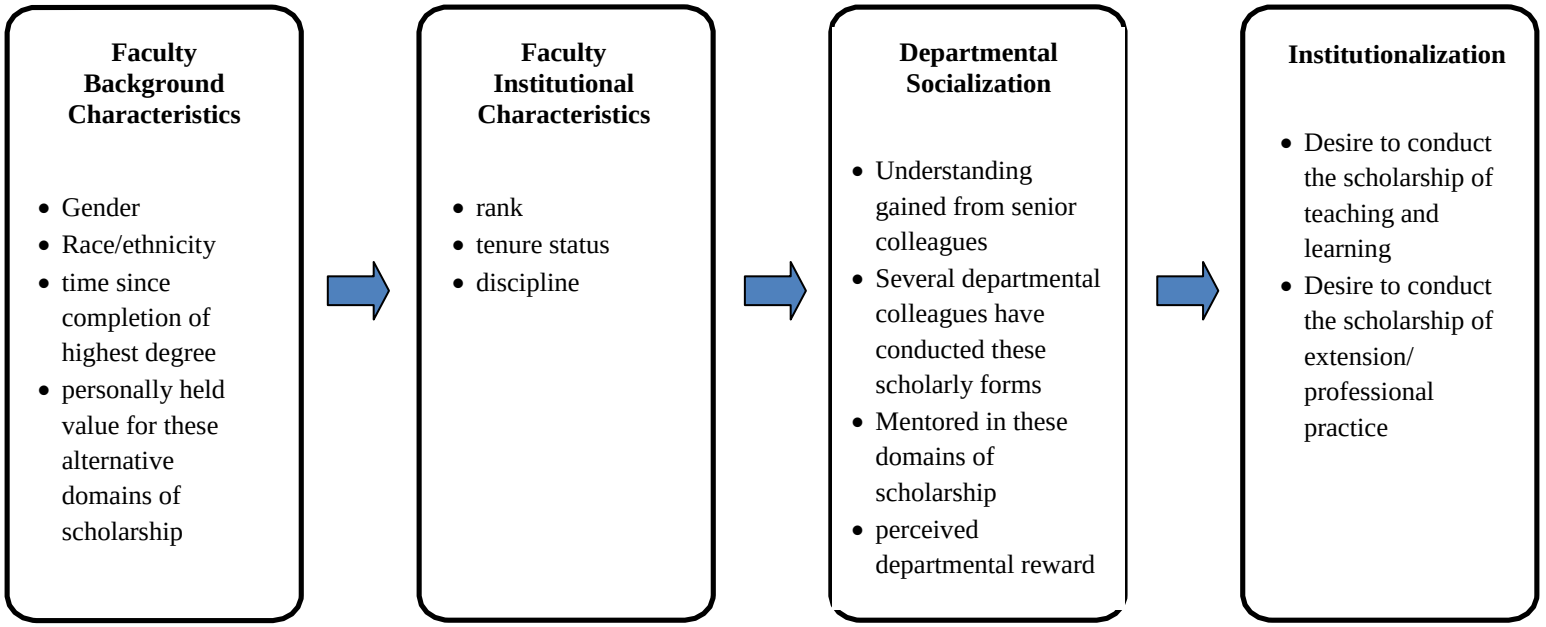

Figure 24. Twait Model for Institutionalization of New Domains of Scholarship (MINDS)

Individual value for and desire to conduct both scholarly domains are strong at this large, research-intensive land-grant institution. However, while value and interest are strong, uncertainty remains about the departmental reward for conducting the Scholarship of Teaching and Learning (SoTL) and the Scholarship of Extension/Professional Practice. You have to wonder why if almost everyone values the scholarly domains, concerns remain about whether the scholarship will actually be rewarded. There is an obvious disconnect between individual value (self-knowledge) and departmental value (social knowledge). O'Meara (2002b) reminds us that reward systems are about the valuing of professional work. If done well, faculty reward systems that encourage and recognize these scholarly domains can foster faculty satisfaction and growth given the value for and interest in them.

A strong opportunity for this institution to advance the two scholarly domains to Curry's level of incorporation or institutionalization is clearly evident, given the strong faculty value for the scholarly domains at the individual level. This work would better align the institution's mission statement with faculty roles and rewards. It would also provide much-needed faculty workload consideration, given Diamond's 2002 diagram of all faculty work, how much of that work counted prior to Boyer's *Scholarship Redefined*, and how much of that work could count following efforts to institutionalize Boyer's scholarly domains.

Too much is known now about how significantly faculty workload expectations have escalated with the increasing expectation to secure research grants and publish articles in the most prestigious peer-reviewed journals. The current publication standards for tenure are more than triple what they were in the 1970s (Schuster & Finkelstein, 2006). Meanwhile, society's problems are complex and call for the attention of our best and brightest minds. Our students deserve the very best undergraduate and graduate education we can provide. Have our

scholarship expectations served them well or developed a system in which they are merely an afterthought? Have we nationally really aligned what we say our missions are and what work we reward and value? To conclude simply, more work must still be done to keep the seminal work of Ernest Boyer in front of us, for the sake of our students, the public we serve, and our faculty who deserve more from our institutions, as opposed to thinking we can just continue to expect more from them.

APPENDIX A. REVISED SURVEY INSTRUMENT

A. Scholarly Outcomes and Activities Please indicate how many times you have engaged in any of the following within the **past three years.**	None	1-2	3-	6-10	11+
Published Scholarly Outcomes					
A1. A book or a book chapter describing a new theory developed by you					
A2. A refereed journal article or a book reporting findings of research designed to gain new knowledge					
A3. A critical book review published in an academic or professional journal					
A4. An article or a book addressing a current disciplinary/interdisciplinary topic published in popular press					
A5. An article that proposes an approach to the bridging of theory and practice					
A6. A critical book review published in the popular press					
A7. A publication on a new instructional method or approach developed by you					
A8. A journal article reporting findings of research designed to solve a practical problem					
A9. A publication on an approach or strategy for dealing with classroom-management problems faced in teaching a particular type of course					
A10. A video or documentary					
A11. A publication on an approach or strategy to help students to think critically about course concepts					
A12. A publication reporting the development of methods to assess student learning of course content					
A13 A book of poetry or other literary work					
A14. A journal article describing a new theory developed by you					
A15. An external competitive grant or contract (funded or unfunded)					
A16 An article published in a literary journal					
Unpublished Scholarly Outcomes and Scholarly Activities					
A17. Developed peer reviewable but unpublished examples, materials, class exercises or assignments that help students to learn difficult course concepts					
A18. Presented a paper at a scholarly association meeting					
A19. Developed an innovative technology or process that was patented					

A20. Conducted peer reviewable seminars for lay persons on current disciplinary topics					
A21. Engaged in clinical and diagnostic practice					
A22. Served as a referee for journals, books, grants, exhibitions, etc.					
A23. Developed a theory derived from a review of research findings.					
A24. Developed a creative performance or juried exhibition					
A25. Created a peer reviewable but unpublished approach or strategy for dealing with classroom management problems faced in teaching a particular type of course					
A26. Created a peer reviewable but unpublished approach or strategy to help students to think critically about course concepts					
A27. Served as an editor for a journal or served on editorial boards					
A28. Experimented with new teaching methods or activities and documented these in a peer reviewable but unpublished manner					
A29. Developed peer reviewable but unpublished methods to assess student learning of course content					
A30. Served on a governmental or non-profit agency board due to your professional expertise					
A31. Produced a new screenplay, sculpture, painting, or music composition					
A32. Provided leadership in a professional organization					
A33. Made a presentation to colleagues about new instructional techniques					

Below are statements about scholarship relating to you and your department. Please indicate your level of agreement or disagreement with each statement using the following response categories: 1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree

B. Individual Statements	Strongly Disagree	Disagree	Agree	Strongly agree
B1. I understand the distinctions between scholarly teaching and the scholarship of teaching and learning as defined by Iowa State University?				
B2. I am satisfied with how scholarship is evaluated in my department				
B3. I value scholarship that contributes to the improvement of college teaching				
B4. I value scholarship that makes connections across different academic disciplines				
B5. I value scholarship that applies the knowledge and skill of my academic discipline to practical problems				
B6. I would like to conduct the scholarship of teaching and learning in the future				
B7. I would like to conduct the scholarship of extension/professional practice in the future				
C. Departmental Statements				

C1. The criteria for tenure in my academic department are broad enough to include all of the various forms of scholarship in which faculty are engaged				
C2. The majority of my departmental colleagues value the scholarship of extension/professional practice (scholarship that applies the knowledge and skill of an academic discipline to practical problems				
C3. In my academic department, various forms of scholarship receive some weight in the awarding of tenure				
C4. The majority of my departmental colleagues value the Scholarship of Teaching and Learning (scholarship that contributes to the improvement of college teaching /student learning				
C5. In my academic department, all forms of scholarship receive equivalent weight in the promotion of faculty members				
C6. Several of my departmental colleagues have conducted alternative forms of scholarship such as the scholarship of teaching and learning or the scholarship of extension/professional practice				
C7. The majority of my departmental colleagues value research that leads to new disciplinary knowledge				
C8. The criteria for promotion in academic rank in my academic department are broad enough to include the full range of scholarship conducted by faculty				
C9. I believe I am having or had the opportunity to influence the scholarly culture of my department during my initial entry into the department at ISU				
C10. I am gaining or have gained an understanding of what scholarship is valued from observing my senior colleagues in the department				
C11. I am being mentored or was mentored in the pursuit of alternative forms of scholarship (SOTL, Scholarship of Extension/Professional Practice) by my faculty mentor(s) at ISU				

Below are two open-ended questions related to your socialization experience as a scholar at Iowa State University.

D. Open-Ended Question

D1. What factors influenced/contributed to your learning of the scholarly expectations of your department?

D2. What barriers have you encountered to conducting either the scholarship of teaching and learning or the scholarship of extension/professional practice?

E. DEMOGRAPHIC INFORMATION (will only be used for statistical purposes)

E1. Are you **tenured** in your current position? Yes____No____

E2. What is your **academic rank**? Lecturer____ Senior Lecturer____

Assistant Professor____ Associate Professor____ Professor ____

Clinician ____ Senior Clinician____

E3. What is the highest educational degree you have **completed**?

BS/BA ___ MS/MA/__ MFA_____

Doctorate___ Other(Please specify)_____

E4. In what year did you complete your **highest degree**?_____

E5. What is your **Race or Ethnicity**?Hispanic

White, Non-Hispanic

Black, Non-Hispanic_____

American Indian or Alaskan Native_____

Asian or Pacific Islander

Other_____

E6. Please indicate the nature of your primary academic discipline? (Place an X between the brackets preceding your choice. Select only one choice.)

( ) Humanities based

( ) Science, Technology, Engineering, or Mathematics (STEM) based

( ) Arts

( ) Social Sciences

( ) Other (specify) [ ]

E7. What is your gender? Male____ Female____

APPENDIX B. CORRESPONDENCE WITH PARTICIPANTS

Email Letter to Participants

Dear Colleague:

As the President of the Faculty Senate and the Director of the Center for Excellence for Learning and Teaching (CELT), we invite you to participate in an important study entitled "Institutionalization of the Boyer Scholarship Model at Iowa State University (ISU)" that is being conducted under the guidance of Dr. Frankie Santos Laanan by Christine Twait, a graduate student at ISU. The purpose of the study is to investigate the relationship between faculty characteristics such as gender, race/ethnicity, highest degree completed, time since completion of highest degree, rank, and discipline; faculty socialization within the department; and the conduct of and desire to conduct Ernest Boyer's relevant domains of scholarship (scholarship of teaching and learning, scholarship of extension/professional practice, and the scholarship of discovery) at Iowa State University. The results from the study will provide Iowa State University, particularly CELT, with aggregate information that is essential to best assist faculty in the pursuit of their scholarly interests.

The survey will take approximately 15-20 minutes to complete. There are no foreseeable risks from participating in this study.

To access the survey, you must follow the instructions below:

Link

When you click on the above link, you will be automatically logged into the survey. Your participation is voluntary and will be confidential. Your responses will only be reported in an aggregate form (e.g. 20% of females reported…). You can choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. Completion of the survey serves as your voluntary agreement to participate in this research project.

Your response will be de-identified (removal of email address) by the Qualtrics administrator upon adequate response and replaced with a random and unique identification code. Dr. Laanan and Ms. Twait will be provided the de-identified dataset. Your responses will remain completely confidential and secured and your name will never be associated with the answers you provide. The ISU Human Subjects Research Office has approved this research study and survey.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study.

- For further information about the study contact Christine Twait at 319-239-7280 or via email at ctwait@iastate.edu. Dr. Frankie Santos Laanan can be reached at 515-294-7292 or via email at laanan@iastate.edu
- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office of Research Assurances, Iowa State University, Ames, Iowa 50011.
- If you have difficulty accessing the web survey, please contact the Research Associate, Carlos Lopez at clopez@iastate.edu or via telephone at (515) 294-0598.

Thank you for your time and attention and for supporting our efforts to understand the institutionalization of Boyer's scholarship model at ISU.

Sincerely,

Steve Mickelson Steve Freeman

Director President

Center for Excellence in Learning and Teaching Faculty Senate

Follow-up Email to Participants

Dear Colleague:

As you will recall, you received an earlier invitation from us to participate in an important study at Iowa State University (ISU). We are now writing to remind you of this opportunity for participation in the study entitled "Institutionalization of the Boyer Scholarship Model at ISU" that is being conducted under the guidance of Dr. Frankie Santos Laanan by Christine Twait, a graduate student at ISU. The purpose of the study is to investigate the relationship between faculty characteristics such as gender, race/ethnicity, highest degree completed, time since completion of highest degree, rank, and discipline; faculty socialization within the department; and the conduct of and desire to conduct Ernest Boyer's relevant domains of scholarship (scholarship of teaching and learning, scholarship of extension/professional practice, and the scholarship of discovery) at Iowa State University. The results from the study will provide Iowa State University, particularly the Center for Excellence in Learning and Teaching, with aggregate information that is essential to best assist faculty in the pursuit of their scholarly interests.

The survey will take approximately 15-20 minutes to complete. There are no foreseeable risks from participating in this study.

To access the survey, you must follow the instructions below:

Link

When you click on the above link, you will be automatically logged into the survey. Your participation is voluntary and will be confidential. Your responses will only be reported in an aggregate form (e.g. 20% of females reported…). You can choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. Completion of the survey serves as your voluntary agreement to participate in this research project.

Your response will be de-identified (removal of email address) by the Qualtrics administrator upon adequate response and replaced with a random and unique identification code. Dr. Laanan and Ms. Twait will be provided the de-identified dataset. Your responses will remain completely confidential and secured and your name will never be associated with the answers you provide. The ISU Human Subjects Research Office has approved this research study and survey.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study.

- For further information about the study contact Christine Twait at 319-239-7280 or via email at ctwait@iastate.edu. Dr. Frankie Santos Laanan can be reached at 515-294-7292 or via email at laanan@iastate.edu

- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office of Research Assurances, Iowa State University, Ames, Iowa 50011.

- If you have difficulty accessing the web survey, please contact the Research Associate, Carlos Lopez at clopez@iastate.edu or via telephone at (515) 294-0598.

Thank you for your time and attention and for supporting our efforts to understand the institutionalization of Boyer's scholarship model at ISU.

Sincerely,

Steve Mickelson Steve Freeman

Director President

Center for Excellence in Learning and Teaching Faculty Senate

APPENDIX C. INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Resear
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 4/19/2011

To: Christine Twait
213 East Bartlett
Cedar Falls, Iowa 50614

CC: Dr. Frankie Santos Laanan
N225A Lagomarcino

From: Office for Responsible Research

Title: The Institutionalization of Boyer's Scholarship Model at Iowa State University

IRB Num: 11-084

Submission Type: New **Exemption Date:** 4/19/2011

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the IRB application**, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- **Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making <u>any</u> changes**, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to **use only the approved study materials** in your research, including the **recruitment materials and informed consent documents that have the IRB approval stamp**.

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

For IRB Use Only		
	Review Date: April 19 2011	IRB ID: 11-084
	Approval Date: April 19, 2011	Length of Approval: Na
	Approval Expiration Date: Na	FULL Committee Review:
	EXEMPT per 45 CFR 46.101(b): 2 Date: 4/11/11	Minimal Risk: ✓
	EXPEDITED per 45 CFR 46.110(b)	More than Minimal Risks:
	Category _____, Letter _____	Project Closed Date:

INSTITUTIONAL REVIEW BOARD (IRB)
Application for Approval of Research Involving Humans

RECEIVED
FEB 11 2011
By IRB

SECTION I: GENERAL INFORMATION

Principal Investigator (PI): Christine K. Twait	Phone: 319-239-7280	Fax: 319-273-2634
Degrees: Masters, pursuing Ph.D.	Correspondence Address: 213 East Bartlett, Cedar Falls, IA 50614	
Department: Educational Leadership and Policy Studies	Email Address: Christine.twait@uni.edu	
Center/Institute:	College: ISU – Human Sciences	
PI Level: ☐ Faculty ☐ Staff ☐ Postdoctoral ☒ Graduate Student ☐ Undergraduate Student		
Alternate Contact Person: Frankie Santos Laanan	Email Address: Laanan@iastate.edu	
Correspondence Address: N 225A Lagomarcino Hall, ISU	Phone: 515-294-7292	
Title of Project: The institutionalization of Boyer's scholarship model at Iowa State University		
Project Period (Include Start and End Date): 03/01/11 to [mm/yy/dd][09/01/11]		

FOR STUDENT PROJECTS	
Name of Major Professor/Supervising Faculty: Frankie Santos Laanan	Signature of Major Professor/Supervising Faculty:
Phone: 515-294-7292	Campus Address: N 225A Lagomarcino Hall, ISU
Department: Educational Leadership and Policy Studies	Email Address: Laanan@isu.edu
Type of Project: (check all that apply) ☒ Research ☐ Thesis ☒ Dissertation ☐ Class project ☐ Independent Study (490, 590, Honors project) ☐ Other. Please specify:	

KEY PERSONNEL

List all members and relevant experience of the project personnel. This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project.

NAME & DEGREE(S)	SPECIFIC DUTIES ON PROJECT	TRAINING & EXPERIENCE RELATED TO PROCEDURES PERFORMED, DATE OF TRAINING
✓ Christine K. Twait, MPA	Doctoral Student/ISU	CITI Human Subjects Training through UNI 01/07/11
✓ Frankie Santos Laanan, Ph.D.	Major Professor, Dissertation	National Institutes of Health Human Participant Protections 10/23/03
✓ Carlos Lopez	Qualtrics Administrator	Iowa State University, 3/30/09

To list additional personnel please attach separate sheet.

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